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COMPUTERWORLD

Ethernet longevity to stave off upgrade pain

BY JOANIE M. WEXLER
CW STAFF

DALLAS — Users last week saw living proof that they will be able to milk their existing Ethernet technology for a few more years, despite the growing demands already straining network performance.

Many users had expressed fear that looming, bandwidth-voracious applications and burgeoning volumes of network users might soon force them to swap out widespread investments in their network infrastructures at a time when they can ill afford it.

The higher bandwidth of 100M bit/sec. Fiber Distributed Data Interface and the switched nature of still-developing, gigabit-speed Asynchronous Transfer Mode, for example, have been much-ballyhooed candidates for more heavily burdened networks.

However, users said they were gratified by Networld '92 demonstrations of "Ethernet-extending" technologies such as full-motion video. The demos came from the likes of Kalpana, Inc., Alantec Corp., LANnet, Inc. and Fibronics International, Inc., all of which chose to run multimedia applications as an extreme example of how far Ethernet can stretch.

The vendors take slightly different approaches to dedicating

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Citicorp banks on CA licensing

Deal signals shift from tiered pricing

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — Citicorp and Computer Associates International, Inc. last week struck a new flat-fee, enterprisewide software agreement encompassing the bank's worldwide information systems operations. The agreement could redefine the future of software licensing policies.

The Citicorp licensing pact marks a shift away from the standard tiered-pricing model that CA, IBM and other software vendors have followed for the past decade. At a press briefing, Charles B. Wang, CA's chairman and chief executive officer, said CA will announce a new program aimed at altering the firm's tiered-pricing formula by month's end.

Analysts said that announcement will carry new initiatives aimed at providing customers with a choice of licensing options ranging from flat-fee pricing to usage-based pricing models.

The CA/Citicorp agreement is based on pricing policies CA instituted last spring [CW, April 20].

The program Citicorp chose — CA's Enterprise Licensing program — allows Citicorp to run CA's mainframe software freely throughout its operations on any number of CPUs, regardless of CPU upgrades or computer relocation.

In addition, the flat-fee plan may be extended to allow Citicorp to run CA's personal computer and minicomputer software under similar conditions.

Under the enterprise licensing scheme, pricing is based on the number of mainframe million instructions per second of computing power required to run the the company's software. CA may extend flat-fee pricing to the CA minicomputer and PC products

Continued on page 7

Capitalizing on technology
Data from Citicorp shows the company's large IS investment, some of which will be covered by the CA licensing pact

Assets:	$219.3 billion
Employees:	83,000
Number of mainframes:	More than 100
IS operations:	Supports locations in 90 countries
Number of PCs:	Tens of thousands

Source: Citicorp

Del Monte reaps fruits of IS overhaul

BY KIM S. NASH
CW STAFF

SAN FRANCISCO — Del Monte Foods has spent more than $12 million on bean counters during the past two years — asparagus, peach and corn counters, too. And the company even threw an accounting system into the pot.

Tight-lipped since a leveraged buyout in 1990, Del Monte recently finished its biggest information systems project ever. The $1.4 billion canned foods maker downsized its three most important systems — raw product tracking, grower payment and financials — to run on IBM's Application System/400.

The first phase of the project ended in June with the unceremonious shutdown of 30 lumbering, 12-year-old IBM Series/1 minicomputers in favor of a network of 24 nimbler AS/400s.

Cutting back

Maintenance costs should sink from about $3 million per year to half that. And the leaner system let Del Monte cut its IS staff from 240 to approximately 105.

The project brings Del Monte up to speed with rivals in the

Continued on page 12

William Mercer McLeod

Mussa (left) and Caputo *led Del Monte's downsizing effort*

Mail boxers

While Goliaths Lotus and Microsoft duke it out to establish an industry standard for E-mail APIs, other E-mail systems pass them by in overall user satisfaction.

See Buyers' Scorecard, page 70

Product	Satisfaction rating
Notework	8.9
WordPerfect Office	8.4
CC:Mail	7.9
Microsoft Mail	7.9
DaVinci E-mail	7.6

Maximum possible score: 10

OBJECT-ORIENTED OBSTACLES

Pain first, payback later

BY JEAN S. BOZMAN
CW STAFF

At Kash n' Karry Food Stores, Inc., a $1 billion grocery chain in Tampa, Fla., the initial sprint toward object-oriented technology was extremely painful.

Learning to build object-class libraries with C++ took the company's information systems staff more than six months, and re-engineering IS operations boosted the $6 million IS budget by 12%.

"Your IS shop almost stops for six to nine months as people go through the learning curve," said Jim Stikeleather, director of systems development at Kash n' Karry. "You can't ping-pong back and forth between the paradigms. You have to go forward."

Bringing object-oriented technology into IS development can be a trying hike up a long, steep learning curve, agreed early users who have tried it. Cobol programmers often become winded during the journey, and training costs can take an IS manager's breath away. But after struggling with the software equivalent of the Boston Marathon's Heartbreak Hill, users say the rest of the trek is

Continued on page 20

INSIDE

Aligning IS with business goals is the name of the game today, and re-engineering and total quality management are key to the effort. See exclusive *Computerworld* survey, page 108.

A cooperative marketing initiative from Borland and WordPerfect could foreshadow the firms' offering of a software suite. Page 4.

LANs, groupware highlight Networld '92. See stories on pages 14, 15 and 16.

Product Spotlight — Revisiting project management software. Page 97.

NEWSPAPER

EXECUTIVE BRIEFING

October 19, 1992

A COMPREHENSIVE GUIDE TO THIS WEEK'S NEWS

LARGE SYSTEMS

A FLAT-FEE, ENTERPRISEWIDE SOFTWARE licensing agreement reached by Citicorp and Computer Associates last week could mark a major shift away from the tiered-pricing model that CA and many other software vendors have followed for the past decade. *Page 1*

PYRAMID TECHNOLOGY INTRODUCES a Unix screamer positioned for data center use. The company also launches a strategy with two partners, Comdisco and Integris, through which users would set up the new system in a mainframe cohabitation scheme. *Page 8*

A COMDISCO EXECUTIVE says downsizing is often not a matter of unplugging the mainframe. Rather, it entails off-loading most functions other than data storage. *Page 8*

EXTENDING THEIR RELATIONSHIP, Hewlett-Packard and minisupercomputer maker Convex last week announced plans to use each other's technologies in new products. *Page 6*

THINKING MACHINES TARGETS COMMERCIAL users with a new supercomputer, but commerical software packages will not be available for at least a month. *Page 6*

INDUSTRY

WHAT'S UP, DEC? Apparently a lot, according to CW editor in chief Bill Laberis, who examimes whether the company is headed in any direction other than down. *Page 32*

POOR DEC AND IBM EARNINGS surprise analysts as both companies struggle to re-engineer themselves. *Page 129*

MICROSOFT EARNINGS STILL LOOK ROSY, while a lack of Windows applications keeps Borland off track. *Page 129*

KNOWLEDGEWARE IS SET TO ACQUIRE a small consulting company, the first in an expected series of moves planned to boost the vendor's service business. *Page 4*

SUN'S 1991 RESTRUCTURING into individual companies has improved its market focus, particularly in the PC space, and encouraged more partnerships with outside vendors. But Sun hopes that all its users notice is better service. *Page 47*

LANS

NETWORLD '92 ATTENDEES WITNESSING full-motion video running over Ethernet are hopeful that today's technology might tide them over until their budgets blossom. *Page 1*

IN A MOVE THAT WILL MAKE multiserver LANs much more afffordable, both Novell and Microsoft will offer per-node licensing. *Page 10*

NOVELL'S HOPES FOR ENTICING corporate is with a feature-rich update of NetWare 4.0 may fall short of the mark because many users have yet to upgrade to the previous version of NetWare, and 4.0 will not include several key features sought by IS managers. *Page 15*

IBM ANNOUNCES LAN SERVER 3.0, a full 32-bit, OS/2 2.0-based implementation of its LAN operating system. *Page 14*

MICROSOFT ADDS MANAGEMENT UTILITIES as well as OS/2 2.0 support to LAN Manager. *Page 14*

ENTERPRISE NETWORKS

▶Cisco Systems announces 12 partners to help it develop APPI, a proposed alternative to IBM's Advanced Peer-to-Peer Networking protocol for routing SNA over an internetwork. *Page 10*

▶Recent announcements break some ground in the hot area of LAN-to-WAN network management, but users need more. *Page 77*

▶Upcoming products allow users to mix and match frame relay with other types of networking. *Page 10*

▶Salomon Brothers reaps big benefits from a newly automated chargeback accounting system that tracks the number of data packets run over its TCP/IP Ethernet WAN. *Page 77*

▶Network routers enter the world of supercomputing as Network Systems Corp. prepares to launch a Hippi interface for its gear. *Page 77*

▶France Telecom announces that it will incorporate Notes over its Numeris ISDN network. *Page 78*

MANAGEMENT

▶The Department of Labor revises its rules to exempt all salaried programmers from mandatory overtime pay. *Page 24*

▶Users say that while they're pleased with IS' response to day-to-day problems, they wish IS was more in tune with their specific departmental needs. *Page 114*

▶As IS gears up to align its goals with the business goals of the company, re-engineering and total quality management emerge as top priorities. *Page 108*

▶Tight central control of IS works well at Baltimore Gas and Electric, but the $2.5 billion utility is beginning to give users more say in how IS dollars are spent. *Page 107*

PROJECT MANAGEMENT

▶John Diebold recommends a technology policy that is based on the concept of "demand-pull," rather than the outmoded "supply-push" approach. *Page 33*

▶Adding soft information such as comments, opinions and predictions into an executive information system makes the EIS more useful to executives. *Page 103*

▶Avoid the beta-test blues by keeping in touch with program coordinators. *Page 122*

▶Project management software has gotten easier with the help of Windows interfaces and vendor attention to navigation aids. *Page 97*

SOFTWARE DEVELOPMENT

▶Early users of object-oriented technology say it can be used to create a new class of production systems that have quick development times and low maintenance costs. But entry into the object-oriented world can bring unexpected training costs and a steep learning curve before benefits arrive. *Page 1*

▶Burl Software announces a flexible tool for analyzing creaky old Cobol programs. *Page 92*

▶Wall Data has announced Rumba Tools for APPC, a graphical development tool for the IBM APPC interface. *Page 92*

▶Unisys used last week's Cube and Use user group conference to announce plans to port its Mapper application development environment to other vendors' Unix and open systems platforms. *Page 91*

PC SOFTWARE

▶Borland and WordPerfect's cross-marketing agreement marks a small step toward a software suite. *Page 4*

▶Microsoft's announcement that Windows NT will be delayed gives IS managers reason to wonder if they want to be among the early implementors of the new operating system. *Page 37*

▶Borland says its recently released Quattro Pro for Windows is aimed at increasing usability, not functionality. *Page 37*

▶Doctors spruce up their investigative unit with a PC-based tracking system. *Page 37*

CLIENT/SERVER

▶Del Monte cuts costs and IS staff by redesigning business processes and moving to a network of IBM AS/400s. *Page 1*

▶Interstream's new caching product is said to enable users to go on working on NFS client systems even when the server is temporarily out of whack. *Page 68*

▶ParcPlace Systems introduces a new icon-based visual programming environment for client/server applications. *Page 91*

WORKSTATIONS

▶Sun is crashing into previously off-limits 3-D graphics territory with the help of graphics pioneer Evans & Sutherland's new SPARCstation-based Freedom series. *Page 4*

▶The consortium that backs HP's PA-RISC architecture is striving to achieve shrink-wrapped software compatibility across PA-RISC brands and has turned to a rival RISC camp for testing technology. *Page 89*

▶A storage vendor and a systems integrator have joined forces to offer IBM RS/6000 customers what IBM cannot: high-availability clustering software integrated with a fault-tolerant RAID for up to 96G bytes of storage. *Page 24*

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• Networld attendees flock to groupware demonstrations after discovering that the task-streamlining aspects of the technology go hand in hand with their business re-engineering goals ..... Page 14

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• Revised target dates for Lotus' Notes Version 3.0 will cause only some users to adjust their implementation plans ..... Page 47

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• Unexpected up-front expenses and other surprises await those companies that are forced into EDI before they can do the proper planning ..... Page 82

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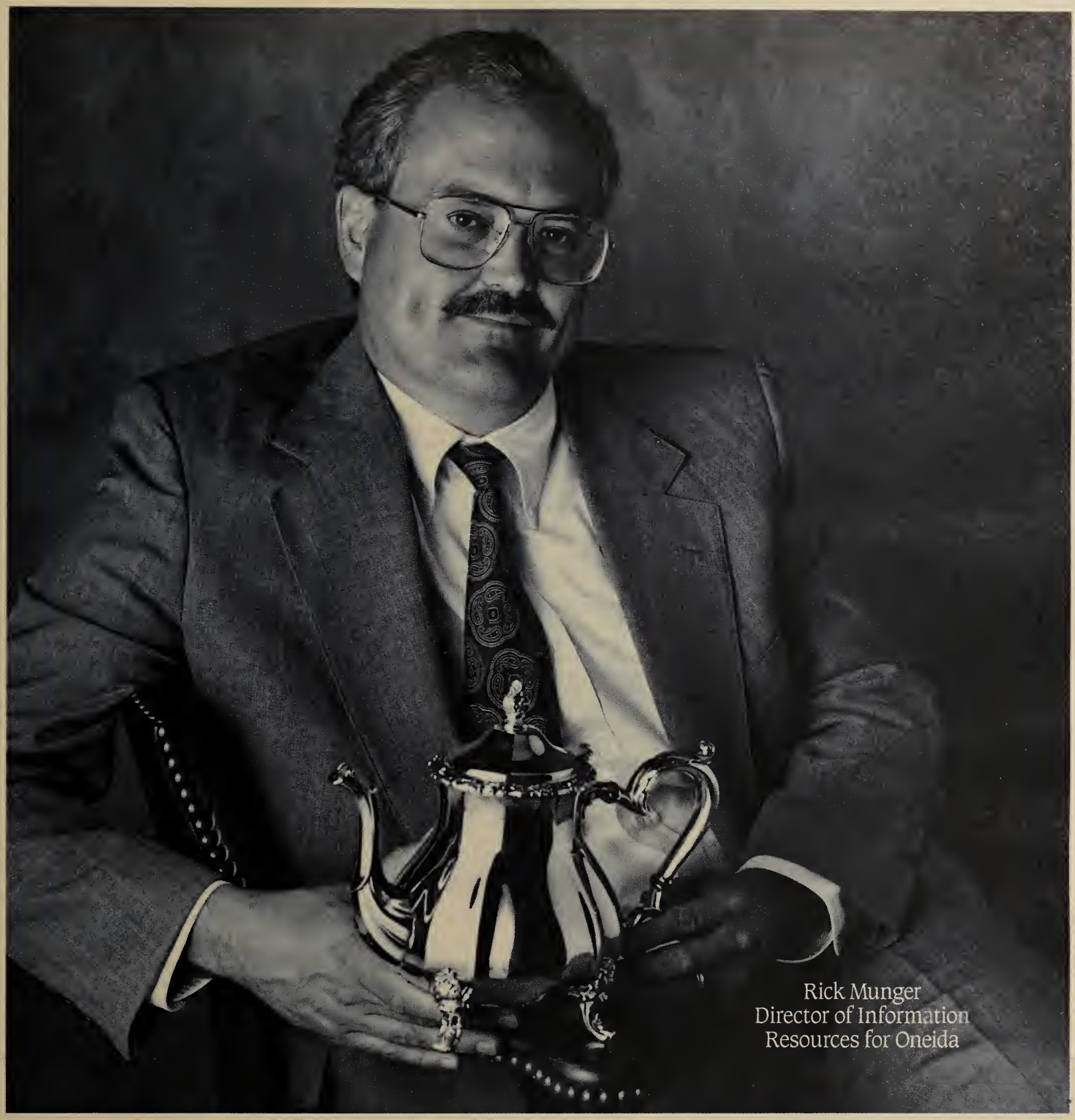

"When we decided to downsize, I was pleasantly surprised to see that CA's a leading AS/400 software vendor. The fact that they offer the leading AS/400 manufacturing and warehouse software made it much easier for us. It's always better to go with somebody you already know and trust."

CA90s

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WordPerfect, Borland team up

BY CAROL HILDEBRAND
and ROSEMARY CAFASSO
CW STAFF

A cross-marketing agreement disclosed last week by WordPerfect Corp. and Borland International, Inc. could be the first step for the two into software suites. But analysts said the firms will need more ammunition to give them even footing in the fray with Microsoft Corp. and Lotus Development Corp.

Both companies insisted their promotional campaign, which gives their respective users a price break on the other company's key product, is not a response to the suite packaging from Microsoft and Lotus. In fact, a Borland executive said the company is not convinced that suites will have wide appeal. A WordPerfect official, however, said the two firms are working together to strengthen the integration between the two key products.

Dan Lunt, vice president of marketing at WordPerfect, said a suite made up of Office, WordPerfect for Windows, Presentations — WordPerfect's overhauled business graphics package — and Quattro Pro, as well as some sort of database product, certainly made sense, although he said nothing was in the works yet. "There's a natural synergy there," he said.

Lunt said the two companies currently have technology teams working to tighten the integration between their products. "By the next release, the interoperability will be much better expressed," he said, adding that Object Linking and Embedding capabilities will also be in place.

Shot at the competition

Some industry analysts said they suspect the cross-marketing agreement is a first shot at the package their rivals are selling.

"It's an interesting tactic from two companies in a defensive position because of [the availability of] software suites from Microsoft and Lotus," said Bernd Harzog, program director of personal computing at Gartner Group, Inc. "But it doesn't go far enough."

Users expressed some skepticism at the long-term success of any future attempts at a two-company suite of software.

Glen Jurmann, a section manager at Baxter Healthcare Corp., currently uses a suite of Microsoft applications. Jurmann said he would be leery of moving to a Borland/WordPerfect suite because of both integration concerns and long-term strategic issues.

"They're two different vendors, so the products won't be as integrated as Lotus or Microsoft. Unless I saw a merger of the companies, I wouldn't be guaranteed that this is a long-term commitment" for WordPerfect and Borland, Jurmann said. He pointed to WordPerfect's old co-marketing agreement with Lotus, which was scrapped following Lotus' purchase of Ami Pro.

Microsoft's Office and Lotus' SmartSuite, which provide word processing, spreadsheet, graphics and electronic-mail capabilities, list for about $800 each. The suites have been attracting corporate attention for pricing and the promise of integration among a host of business applications, analysts said.

Borland and WordPerfect are also stuck playing catch-up, as Microsoft and Lotus have had their products on the market for two years and six months, respectively.

The Borland/WordPerfect agreement, dubbed the Win-Win campaign, basically consists of cross-competitive upgrades for users of Quattro Pro for Windows and WordPerfect for Windows. Borland users can get WordPerfect for $129, while WordPerfect customers can nab Quattro Pro for $99.99.

Cheaper by the bundle

Borland and WordPerfect's marketing deal sweetens buyers' choices

Product**	Single price	Suite/Bundled price*
Spreadsheets		
Borland's Quattro Pro	$495	$199
Lotus' 1-2-3	$595	$199
Microsoft's Excel	$495	$188
Word processors		
WordPerfect	$495	$199
Lotus' Ami Pro	$495	$199
Microsoft's Word	$495	$188

*Based on suite price divided by number of products **Windows versions

CW Chart: Janell Genovese

Both companies emphasized that the offer does not constitute their answer to SmartSuite and Office, which is a good thing: Analysts said the companies need to offer a full set of integrated products if they hope to compete.

"Essentially, what they are doing is offering the core part of a suite," said Bill Higgs, vice president of software research at Computer Intelligence/InfoCorp in Santa Clara, Calif. "Is it effective? No, I don't think so. But maybe it was the best response they could come up with at this time."

Users can purchase the cross-referenced products from computer retailers through mid-February.

Sun takes on SGI in 3-D arena

BY MARYFRAN JOHNSON
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. is launching itself aggressively this week into a market previously beyond its reach: the high-end, three-dimensional graphics space virtually owned by its neighbor, Silicon Graphics, Inc.

In a joint announcement with Evans & Sutherland Computer Corp. tomorrow, Sun will unveil what analysts agreed is now "the world's fastest 3-D graphics for workstations."

The E&S Freedom Series 1000 and 3000 combine Sun SPARCstation hardware with Evans & Sutherland's graphics accelerators. Available next month at prices from $25,500 to $85,000, the accelerators are customer-installable and connect to Sun's high-end SPARCstation Models 2 or 10 via a single S-Bus card.

The price/performance of the new Freedom series has impressed users and industry observers alike.

"The Evans & Sutherland name adds a lot of credibility, and the pricing is a lot cheaper than the equivalent Reality Engine system from SGI," said Joel Neisen, director of graphics at the Minnesota Supercomputer Center in Minneapolis, which uses about two dozen Silicon Graphics machines.

Battle of 3-D graphics giants

The Sun SPARCstation-based Freedom series from Evans & Sutherland offers better performance at lower prices than Silicon Graphics' top contender

	Freedom 3300	Silicon Graphics' Reality Engine
Memory	32M bytes	32M bytes
Disk	424M bytes	385M bytes
3-D vectors/sec.	3 million	1.2 million
Polygons/sec.	600,000*	350,000
Textured meshes/sec.	240,000*	600,000
Price	$106,295	$128,200

*Requires multiprocessor SPARCstation 10 or uniprocessor with E-cache.

Source: Evans & Sutherland

CW Chart: Stephanie Faucher

Just the right hook

The Freedom series taps into Sun's open graphics hardware and software interfaces, so it is binary-compatible with thousands of third-party graphics applications already available on Scalable Processor Architecture platforms.

"Sun has done a good job in providing the right hooks and handles, so third parties like E&S can get in and make it look pretty seamless to users," said Ken Anderson, an analyst and author of a technical guide to Unix workstations published by Altus, Inc. in Santa Ana, Calif. "SGI clearly has mind share in the 3-D market, but this will give people an alternative."

The alliance offers Evans & Sutherland a lucrative opportunity to sell its graphics products on the highest volume workstation platform. But Silicon Graphics is not ready to fall on its sword just yet.

"This is clearly a threat," acknowledged Josh Mogal, Silicon Graphics' product manager for advanced graphics systems. "But it really comes down to our customers doing benchmarks and seeing how these systems compare in actual application performance."

KnowledgeWare to buy CASE consultancy

BY KIM S. NASH
CW STAFF

ATLANTA — KnowledgeWare, Inc. is expected this week to disclose the purchase of a small Detroit consulting firm, the first in an expected series of acquisitions intended to boost the consulting practice of the computer-aided software engineering (CASE) firm.

KnowledgeWare officials confirmed that Computer and Engineering Consultants Ltd. (CEC) will form the base of KnowledgeWare's new Application Development Solution Services (ADSS) Division upon approval of the deal. Financial details were not disclosed, but all 30 CEC consultants are expected to work at KnowledgeWare, which has worked closely with CEC for nine years.

ADSS' mandate is to help users plan and carry out CASE projects, providing more one-on-one guidance than KnowledgeWare has offered in the past.

About average

KnowledgeWare is not completely behind the curve in terms of adding consulting services. Some rivals, such as Intersolv, Inc., have not made much hay in this area. However, others such as Andersen Consulting and Texas Instruments, Inc. already provide extensive CASE counseling.

Users applauded the move, saying CEC will provide two elements crucial to CASE success but currently lacking in KnowledgeWare's offerings: project management tools and big-picture methodology expertise.

A product-only approach to application development "won't achieve the benefits that have been touted" by CASE proponents, said Mike Loo, director of business systems architecture at V. F. Corp., a diversified firm in Greensboro, N.C., that publishes *Vanity Fair*. The company is using more than 250 copies of KnowledgeWare's Application Development Workbench (ADW) in projects in several divisions.

KnowledgeWare tools, like those of other CASE makers, have been criticized for not delivering on promises such as increasing programmer productivity.

The company said it hopes to erase that reputation by beefing up its services, offering more extensive tool training and showing users how to use CASE in the context of larger business initiatives.

KnowledgeWare will likely see $25 million to $30 million in revenue from ADSS during the first year in operation, according to a source close to the firm.

Whirlpool Corp., a Benton Harbor, Mich.-based appliance maker, hired CEC rather than KnowledgeWare to train programmers because of Foresight, CEC's methodology, said Dick Bohanek, a senior systems analyst.

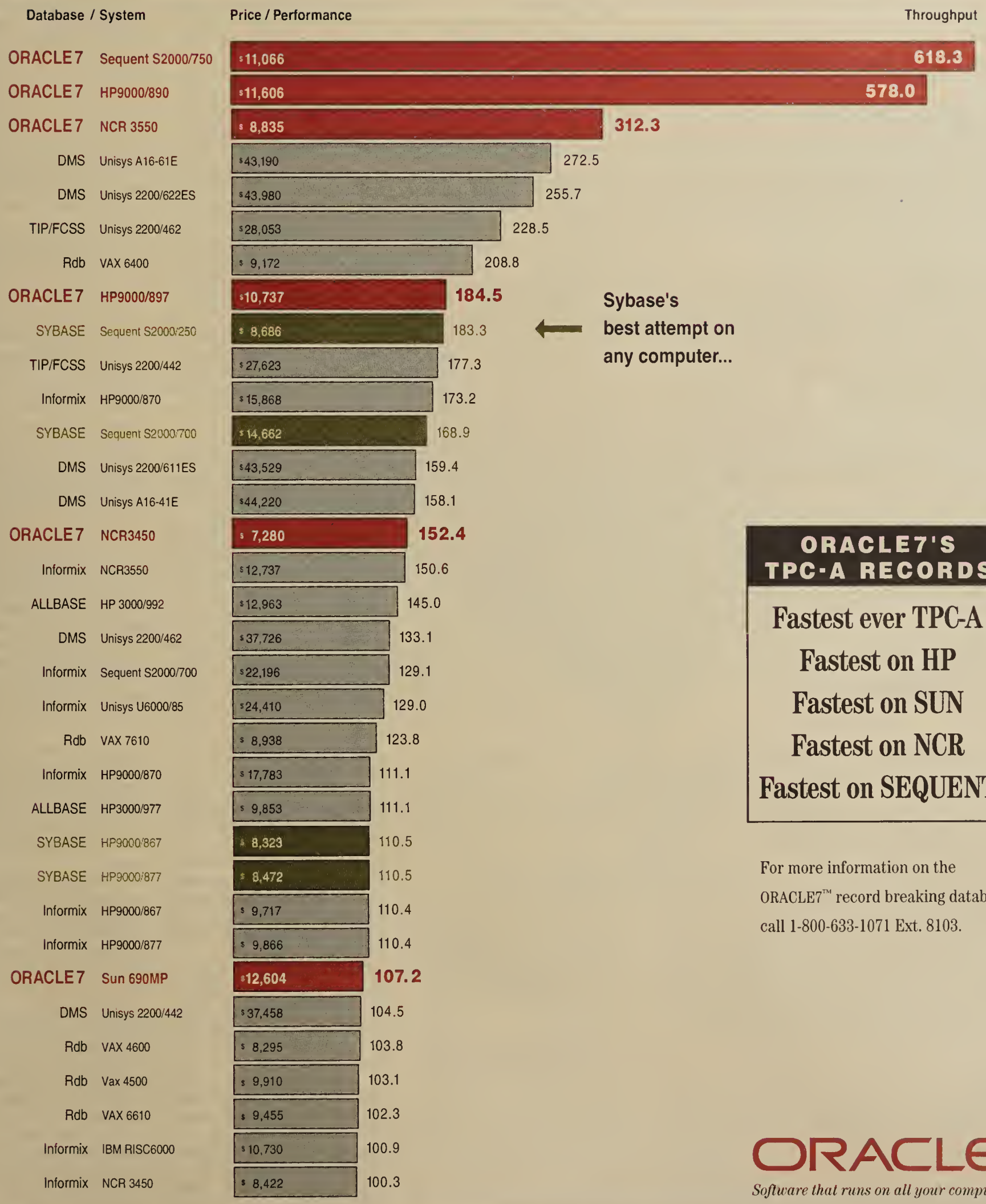
Foresight, which KnowledgeWare will sell after the acquisition, is a framework for planning and implementing software-building projects based on Information Engineering.

"We hope to see better integration of those utilities with ADW," he added.

Jonathan Harding, a former consultant at Computer Task Group, Inc. in Buffalo, N.Y., was appointed to head ADSS.

ORACLE7 VS. SYBASE

DATABASE PERFORMANCE



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NEWS SHORTS

Toll fraud suit settled

AT&T and Mitsubishi International Corp. have agreed to settle an outstanding dispute involving remote-access toll fraud. In June 1991, Mitsubishi charged AT&T with negligence and misrepresentation after it discovered that hackers had broken into Mitsubishi's computer system and run up a phone bill of $430,000. AT&T countersued for the money a year later. The terms of the settlement were not disclosed.

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Review ordered in bundling suit

The U.S. Supreme Court last week ordered an antitrust case won by Prime Computer, Inc. (now Computervision Corp.) to be reconsidered in light of the high court's recent decision against bundling practices that harm independent service firms [CW, June 15]. Virtual Maintenance, Inc. in Rochester Hills, Mich., had accused Prime of tying software updates with computer maintenance and won a $25.3 million jury verdict in 1990, but that was overturned on appeal. Now, the federal appeals court must decide whether to reinstate the jury award for Virtual Maintenance.

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U.S. says no to Inslaw investigator

U.S. Attorney General William Barr said last week he will not appoint an independent counsel to probe allegations that the U.S. Department of Justice stole software from Inslaw, Inc. and sought to drive the company out of business. The House Judiciary Committee recently demanded such an appointment as part of a three-year investigation, which cited a "high-level conspiracy" in the Justice Department to defraud Inslaw. In a statement, committee Chairman Jack Brooks (D-Texas) said the Barr decision may be a "fatal mistake . . . at a time when the public trust in the agency has been severely shaken as a result of the handling of the Iraq inquiry."

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Vendors to demonstrate SMP protocol

At Interop '92 Fall next week, Hewlett-Packard Co., Digital Equipment Corp. and Hughes LAN Systems, Inc. are expected to demonstrate prototypes of the Simple Management Protocol (SMP) on their network management products in order to show that the protocol is a viable successor to Simple Network Management Protocol. A working group appointed by the Internet Engineering Task Force hopes to hammer out a final version of SMP by year's end, vendor spokesmen said.

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Royal Bank building new data center

By year's end, Royal Bank of Canada will have a new data center as a backup facility, according to Vice President John Wood. On the IS agenda for next year, he said, is the possibility of consolidating the bank's nationwide array of Tandem Computers, Inc. computers and replacing some older mainframes.

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Microsoft signs CD-ROM deal

Microsoft Corp. and InfoNow Corp. have announced an OEM agreement whereby Boulder, Colo.-based InfoNow will distribute Microsoft software products via its proprietary electronic distribution system. Subscribers to InfoNow's service receive a CD-ROM that contains technical information about and copies of various software. The subscriber orders packages directly from InfoNow or downloads the software from the CD-ROM.

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Short takes

Component Software Corp. plans to announce its Component Workshop development tools for the Apple Computer, Inc. Macintosh this week. The Lexington, Mass., company is a spin-off of Mitch Kapor's **On Technology, Inc.**, which was originally founded to create cross-platform programming tools and interfaces.... Former **IBM** Great Lakes area general manager Robin W. Sternbergh has been named the first general manager of business process engineering at IBM U.S. She will report directly to IBM North America head Robert LaBant.

More news shorts on page 16

Super CPU maker widens aim

Thinking Machines targets broad commercial database applications

BY JOHANNA AMBROSIO
CW STAFF

CAMBRIDGE, Mass. — Thinking Machines Corp. last week introduced a low-end parallel processing computer targeted at new kinds of commercial database applications.

The company will continue to target its traditional scientific and technical users with the new computer but will also push harder into commercial sites, according to James Bailey, Thinking Machines' director of marketing.

"There are existing products that do a good job of on-line transaction processing and of building databases," he said. "But the machine that creates the data is not powerful enough to understand the data."

So Thinking Machines is positioning its computer as a back-end processor to mainframes. Thinking Machines' wares will chunk through massive amounts of data and find patterns among customer files, for example. "These are applications that don't exist today — applications where the answer depends on looking at all the data instead of at just pieces of it," Bailey said.

Eventually, he said, the parallel computer will replace the mainframe entirely. At that point, the computing power in an organization will consist of desktop workstations and a series of scalable, parallel processors, he said.

At the low end of Thinking Machines' family is the new CM-5 Scale 3 machine, built around Sun Microsystems, Inc.'s Scalable Processor Architecture processor, which features disks and processing nodes in one computer. Users can customize the mix of 3.5-in. disks and processors.

Pricing for the machine, which is available now and runs a variation of the SunOS Unix-based operating system, starts at $750,000. Larger members of the CM-5 family began shipping in late 1991 and are priced from $1.5 million to $3 million.

Data, no matter where it originates, can be stored in one format, the firm said, noting the machine's file server potential. A system with 384 disk-storage nodes has a capacity of 3T bytes and a transfer rate of 4G byte/sec., compared with traditional disk storage systems with transfer rates of about 90M byte/sec.

Also new from Thinking Machines is a tool that allows users to convert old Fortran-77 code into a version of Fortran that is optimized for the parallel computer. The tool, called the Convex Machine Automated Translation, or C-MAX, is bundled into a programming workbench and is not priced separately.

There are no immediate plans to introduce a similar tool to allow applications written in Cobol or C to run in a parallel environment, the company said. These tools would be more useful to commercial users than the Fortran tool.

Observers agreed that the data storage capabilities were among the most exciting features of the Scale 3 computer. "The configuration of a smaller CM-5 is not a surprise. The new disk capabilities are the most significant," said Donald Young, an analyst at Lehman Brothers, Inc.

All of the application packages that run on Thinking Machines' CM-5 family are firmly rooted in the scientific and technical arena, but that will change within the next month, according to President Sheryl Handler.

Although the new Scale 3 computer has no commercial customers yet — it was beta-tested at two universities — some older Thinking Machines customers are already doing data-intensive applications. For example, the U.S. Bureau of the Census is using a Thinking Machines computer to automatically assign code numbers to the profession descriptions that people write down on the census forms.

In addition, Bailey said, Dow Jones News Retrieval and American Express Co. use Thinking Machines iron for database tasks. He said, "We work with a lot of companies we can't talk about because of the proprietary nature of the application." The firm has about 100 customers.

Still, slugging it out in the commercial marketplace will be slow going, most observers agreed. "These machines are very good at processing large amounts of data, and it's a good move to extend the family downward," said Neena Buck, vice president at New Science Associates, Inc., a consulting firm in Westport, Conn. "But it will be a while before most of my [commercial] client base recognizes that."

Young said, "I don't think Thinking Machines will be naive enough to bank the company on the commercial market."

HP, Convex pact ties RISC boxes to minisuper systems

BY ELLIS BOOKER
CW STAFF

PALO ALTO, Calif. — Extending a business and technology pact signed in March, Hewlett-Packard Co. and Convex Computer Corp. last week introduced systems that combine parts of both product lines.

For starters, the companies announced a system that, when running "cluster" software from Convex, transforms a network of HP Apollo 9000 Series 700 workstations into a loosely coupled parallel computer.

Convex, meanwhile, announced a new platform, the Meta Series, which is said to integrate a Convex C minisupercomputer with an HP Series 700 cluster connected over a high-speed fiber or custom network.

Robert J. Paluck, chairman, president and chief executive officer of Richardson, Texas-based Convex, described the announcement as the first of many and said it was a step toward "metacomputing."

Metacomputing, Paluck explained, will comprise heterogeneous hardware connected by high-speed networks with common applications working transparently to the user.

"[Engineering] users spend 10 times as many dollars on workstations as on supercomputers," said Gary Smaby, president of Smaby Group, Inc., a high-performance computer consultancy in Minneapolis. As a result, Smaby said, it makes sense that new high-performance topologies will evolve from the desktop out.

Asked why HP needs a supercomputer vendor to plumb this opportunity, Smaby said that "companies like Convex and Cray [Research, Inc.] have been a test bed for early parallel processing efforts. He added that HP can benefit from Convex experience in compilers and applications.

An HP official suggested last week that one application of a cluster could be in financial services settings, where individual workstations could be clustered after-hours to handle chores better suited to parallel processing.

The cluster product will range in price from $70,000 for a two-CPU system to more than $400,000 for an eight-CPU configuration linked by a Fiber Distributed Data Interface local-area network.

The Meta Series, now in beta testing, will be sold exclusively by Convex, starting at $500,000. This platform will also be a steppingstone to Convex's next-generation, massively parallel supercomputer, which will use Precision Architecture-RISC.

Both systems are slated for availability in first-quarter 1993.

Citicorp banks on CA licensing pact

CONTINUED FROM PAGE 1

the bank uses, the Islandia, N.Y., software vendor said.

MIPS-based pricing is expected to generate significant but undisclosed cost savings for Citicorp, according to Colin Crook, senior technology officer at the $219.3 billion bank holding company. Citicorp and CA executives declined to discuss financial aspects of the contract.

Crook said the deal with CA was designed to enable the bank to develop a standard technology infrastructure.

Citicorp is consolidating its data centers and moving more aggressively into distributed computing as part of a 21-month-old plan to reduce costs and restore earnings growth. The bank plans to work with all of its vendors to achieve cost savings. "We want all of our vendors to change the way they deal with products," Crook said.

> "EVERYONE AGREES that tiered pricing is ridiculous because of the cost escalation" tied to CPU upgrades.
>
> DICK KANE
> ITT HARTFORD

Crook would not elaborate on the bank's consolidation efforts, nor would he outline the client/server platforms the bank has adopted.

Crook said the CA/Citicorp agreement will provide the bank with the flexibility to restructure its technology base. "There is a user-oriented view of software [built into this agreement]," Crook said.

That "user-oriented view" was heartily welcomed by CA customers and industry analysts. David Moore, senior vice president at Mellon Bank Corp. in Pittsburgh, said the CA/Citicorp deal illustrates how CA is trying to liberalize its pricing policies.

Tom Loane, vice president of computers and communications at Alamo Rent-A-Car, Inc., agreed. In Loane's opinion, CA has earned a reputation as a difficult vendor for users to work with, in terms of pricing and other policies. "If they're working to solve the problem, more power to them. We've had a stormy relationship [with CA] over the years, so I hope they are addressing these issues."

MIPS-based pricing does not appeal to Loane, however, because the Fort Lauderdale, Fla.-based car rental agency is increasing its MIPS use at a 50% annual clip.

Users said they would welcome alternatives to the tiered-pricing model. "Everyone agrees that tiered pricing is ridiculous because of the cost escalation" tied to CPU upgrades, said Dick Kane, department head of technical infrastructure and support at ITT Hartford.

Kane said a flat-rate or usage-based pricing model would benefit large IS shops such as ITT Hartford because these installations rely on large or multiple CPUs to run their software and typically license systems software based on the size or number of those CPUs.

Moore said the CA/Citicorp agreement will produce a ripple effect in the software industry. "This is going to put some pressure on other mainframe software vendors" to change their licensing practices, said Moore, who added that Mellon Bank licenses software from nearly 40 mainframe software vendors.

A spokesman at IBM said the company does not plan to change its pricing policies but will instead work with customers on improving the price/value ratio.

Moore and CA have discussed changing Mellon's tiered-licensing agreement to a "seat" pricing model, under which Mellon would be charged by the number of people who use specific CA programs throughout its computing enterprise. Moore said CA is studying this arrangement for Mellon, but he added that seat pricing is a complex model that would be difficult to monitor.

Willing to change

Moore said he is ready to abandon tiered pricing if there is a cost-effective alternative. "We'd like to understand the terms and conditions to see if [flat-fee or usage-based pricing] makes sense for us," he said.

Ed Acly, director of software research at Technology Investment Strategies Corp., a Framingham, Mass., market research firm, lauded CA's shift away from tiered pricing, calling it "a sound business move." Acly said CA's attempts to develop more flexible pricing initiatives would improve the vendor's revenue as well as its relationships with customers.

The CA/Citicorp agreement is similar to one CA reached with General Electric Co. in April. However, GE's Enterprise License covers only its IS operations in North America while Citicorp's licensing agreement is worldwide.

CA's Wang said the software firm is close to completing several enterprise licensing contracts with customers, including an unnamed federal agency.

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Pyramid Unix tack keeps host alive

BY MARK HALPER
CW STAFF

SAN JOSE, Calif. — Pyramid Technology Corp. last week introduced the latest entry in the race to move Unix multiuser boxes into the data center and embarked on a strategy that weans users off mainframes instead of yanking their big iron outright.

The Pyramid tactic, which draws on software and integration technology provided by mainframe industry partners Comdisco, Inc. and Integris Co., calls for users to process transactions on the new Pyramid MIServer ES Series introduced last week while holding on to their mainframe database.

As for the ES line, analysts applauded its performance and scalability. The ES Series runs up to 24 R3000-type processors — twice Pyramid's earlier limit — providing a maximum of 768 million instructions per second. Prices range from $120,000 for a two-processor version to $2.2 million for a 24-processor model with 175G bytes of storage and 256M bytes of memory.

Pyramid's mainframe coexistence approach is intended to save users the expense of running costlier mainframe transaction processing software and of purchasing expensive mainframe upgrades.

Conceding that many large information systems shops are not yet ready to abandon their DB2 mainframe database programs for relational offerings from Oracle Corp., Informix, Inc., Sybase, Inc. and others, Pyramid and its partners said users may eventually want to put more functionality on the Pyramid machine.

"That's our strategy — to take small steps and make them comfortable, as opposed to taking a step off the cliff," said Russell West, senior vice president of strategic planning at Comdisco.

"Users have so many millions of dollars invested [in mainframes] they can't just jump out the door," observed David Dearth, director of systems and technology management at Dallas/Fort Worth International Airport, which runs financial programs on Pyramid's earlier S model without mainframe support.

The approach of offloading rather than replacing mainframes is a savvy one, according to John Jones, an analyst at Salomon Brothers, Inc. in San Francisco. He said many users are not willing to migrate to new databases.

"There's a real question as to whether Sybase and Oracle are industrial-strength, with all the bells and whistles that IBM has with its database technology," Jones said.

Analysts pointed out that the shared approach differs from Hewlett-Packard Co.'s data center initiative, which, they noted, seems more intent on mainframe replacement. HP product line director Doug Gibson said last week that HP is seeking both replacement and offload sales. HP's move to port IBM's CICS transaction processing monitor to HP minicomputers [CW, Oct. 5] helps position the HP machines in a coexistence scheme, he said.

West further noted that data center cohabitation also answers IS managers' concerns that Unix still lacks the security and other features that would make it a suitable data center engine because many functions would still reside on the mainframe operating system.

That approach made sense to Pyramid users such as Dearth, who noted, "Unix is not there to the extent it needs to be so that the customers have all the security they need."

While the foundation of the new platform is the Pyramid machine, Integris and mainframe leasing stalwart Comdisco are supplying two crucial elements. Integris, a systems integration unit of Groupe Bull, is providing a Unix version of IBM's CICS, called UniKix, and Comdisco is furnishing connectivity that ties the Pyramid ES Series into the mainframe. That technology includes a multichannel line called Hyperchannel, supplied by Network Systems, Inc. in Minneapolis, which Comdisco resells.

Unplugged

Downsizing is often not a matter of just unplugging the mainframe, noted Russell West, Comdisco's senior vice president of strategic planning, at last week's Pyramid introduction. Rather, he said, it entails offloading most functions other than data storage.

Citing Computer Intelligence/Infocorp figures showing that total installed mainframe millions of instructions per second in the U.S. rose from 139,000 in 1988 to 341,000 this year, West said that despite the prevalence of mainframe doomsayers, big iron is not rusting away.

Further, he said, users these days are just as likely to ask, "Why do these LANs cost so much?" as they are to question pricey mainframes.

MARK HALPER

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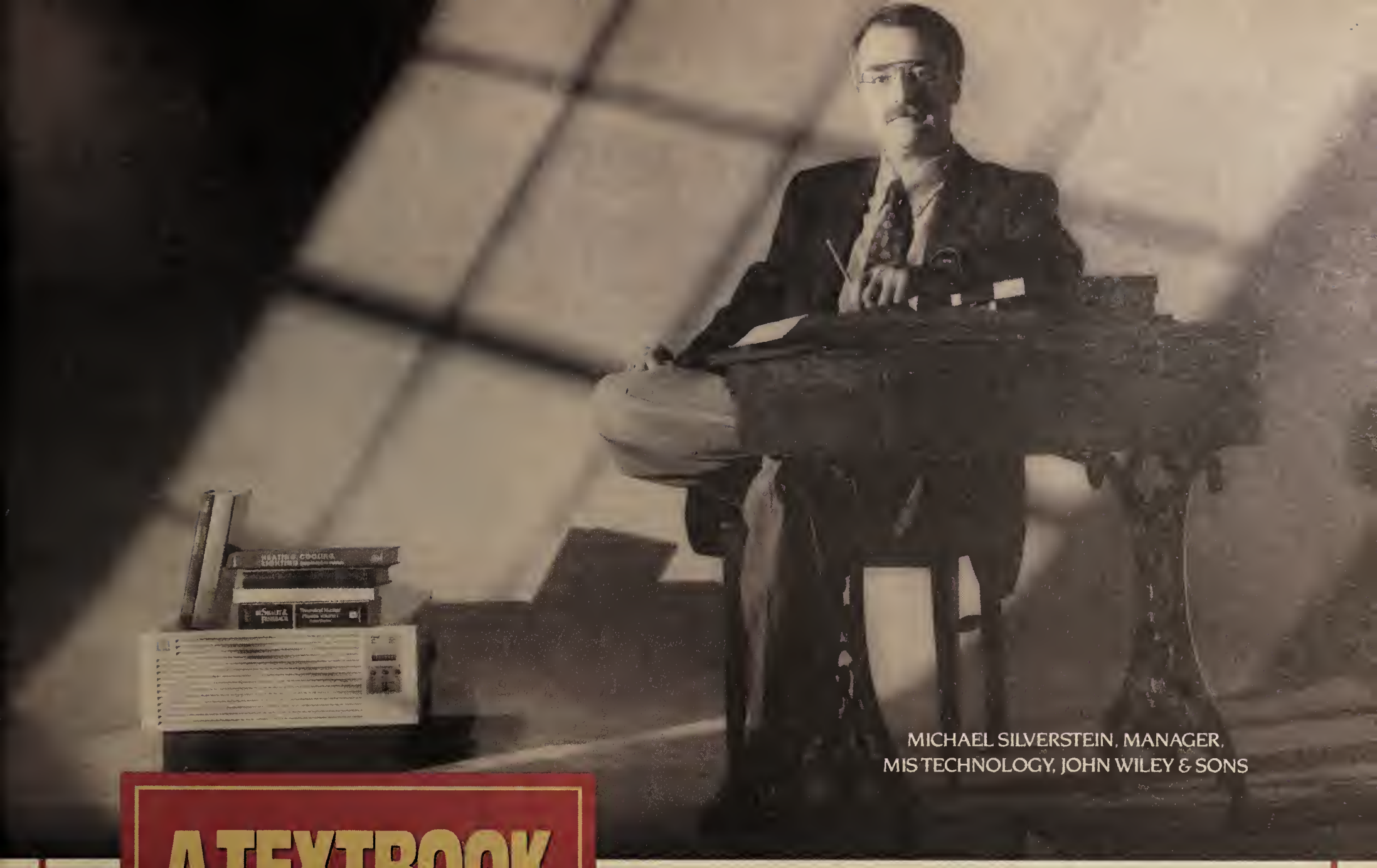

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Services link frame relay, X.25

Users have pick of LAN interconnections from AT&T, BT, DEC, others

BY ELISABETH HORWITT
CW STAFF

This month is seeing a bevy of introductions that promise users the chance to mix and match frame relay's high-speed networking capabilities with their local-area network router and X.25 links.

Users want to be able to install whatever network technology is most cost-effective for a site and then let those sites communicate, said Rick Malone, a principal at Dedham, Mass., research firm Vertical Systems Group.

"So for $5 to $6 an hour you send a bunch of packets at modem speeds over dial-up services to a LAN that is using frame-relay services," he said. This works well for traveling salesmen with laptops, Malone added.

Last week, AT&T announced a service that enables users to send data via dial-up modem link into AT&T's network, where it is converted first to X.25 and then to Transmission Control Protocol/Internet Protocol (TCP/IP) packets, which are delivered to the recipient's LAN via AT&T's frame-relay service, an AT&T spokesman said.

BT said it will deliver an X.25-to-frame-relay gateway service in December. Such services respond to BT customers such as Frank Russell Co., which wants to move some of its larger sites from X.25 to BT's frame-relay service. The Tacoma, Wash.-based financial services firm wants frame-relay users at large sites to be able to communicate with smaller sites that will still make use of the lower speed, lower

cost, dial-up X.25 service [CW, Oct. 12].

And at the Interop '92 Fall show next week, Digital Equipment Corp. will deliver on promises made last year to add a variety of networking capabilities to its DECnis family of high-end routers. Added support will embrace Novell, Inc.'s IPX and Apple Computer, Inc.'s AppleTalk, frame relay and Fiber Distributed Data Interface (FDDI), a DEC spokesman said.

In addition, DEC plans to enhance its DECHub 90 intelligent hub with an Ethernet fiber LAN module and Simple Network Management Protocol management capabilities, according to a DEC spokesman.

DEC will also announce DECWAN Router 90, a new member of the DECHub family that will support TCP/IP, DECnet IV, DECnet V and X.25 protocols, the spokesman said. The product can be used as a stand-alone router priced at $2,300 or integrated into DECHub 90, he added. DEC intends to add Token Ring and FDDI support to its hub family early next year, with Asynchronous Transfer Mode (ATM) support scheduled for later next year, the spokesman said.

Other announcements expected at Interop include the following:

- Sun Microsystems, Inc. subsidiary **SunConnect** is slated to announce a network card that will enable Sun SPARCstations to communicate over wide-area networks using frame relay.
- **Hughes LAN Systems, Inc.** is scheduled to announce a new router combining frame relay, ATM and LAN routing.
- Cray Electronics Holdings PLC subsidiary **Cray Communications** will announce a family of frame-relay products that will support encryption, bridge routing, packet switching and voice over frame relay, the company said.

Microsoft, Novell offer flexible pricing schemes

BY MICHELE DOSTERT
CW STAFF

Targeting the large, multiserver local-area network market, Microsoft Corp. and Novell, Inc. have added per-node pricing schemes to their LAN operating system products.

However, per-node pricing can be a double-edged sword. Early reports from users indicated that Microsoft's approach has infuriated some users.

Previously, Microsoft's LAN Manager and Novell's NetWare were sold "by the server" — that is, users bought a server license at a price that escalated depending on the number of user licenses attached. For example, the price of a server license for NetWare v3.11 with 250 authorized users lists at $12,495, or about $50 per seat.

However, users wishing to add another server to be accessed by the same 250 users had to pay the $12,495 all over again. Thus, the cost per seat for the same user goes up $50 for each additional server attached.

"We have 40 servers, so we are very, very interested in a per-user license," said Karen Scott, manager of computer networks at Weil, Gotshal and Manges, a New York law firm. "Every time I add a server, I have to pay the whole price over again. We buy it as cheap as we can off the shelf from Egghead Software, but as it stands now, we're not getting any volume discount. We paid a tremendous amount to put NetWare 3.11 on all our servers."

Giving users options

Responding to pressure from customers such as Scott, Novell has said it will offer three separate pricing schemes to its large customers: traditional per-server pricing, optional per-node pricing with no penalty for adding servers and a "Gold Disk" site-license scheme, licensing NetWare to an unlimited number of users and servers at a site.

Novell has not yet announced prices for any of the new licensing schemes, but analysts said they expect the cost per seat of multiserver NetWare LANs to drop significantly.

Large NetWare users said they were excited about both new pricing options. "We would be very interested in either a 1,000-user site license or a per-user license, depending on how the numbers shake out," said Bob Tivey, director of information systems at Cadwalader, Wickersham & Taft, a New York law firm. "For one thing, paying per user rather than per server would make it easier and cheaper to segment our LAN so the whole office won't stop if a server goes down."

According to Bob Young, product marketing manager for Novell's NetWare products, large Novell customers will soon have three options: traditional server-based pricing, a per-user pricing structure that is not tied to servers and a site license, with optional direct support from Novell and upgrade protection.

"In talking to our large customers, they wanted more flexibility in the way they installed and managed their NetWare while still keeping their costs down, so we designed this pricing structure to accommodate them," Young said.

Microsoft, meanwhile, last week unwrapped a new pricing scheme for its newly announced LAN Manager 2.2 product. LAN Manager 2.2 will be priced at $1,995 per unlimited-user server license for first-time users; LAN Manager 2.1 users can upgrade for $295 per server.

Users who are willing to purchase Microsoft's forthcoming Windows for Workgroups will get the necessary client software included free of charge. DOS, OS/2 and Windows 3.1 users who do not plan to buy Windows for Workgroups must buy client software from Microsoft priced at $65 per client.

For example, a firm with 100 users on a single LAN Manager server that wishes to upgrade to LAN Manager 2.2 would pay $6,500 in client software upgrades, in addition to the $295 per server licence. This is a strong disincentive for single-server LAN Manager users to upgrade to LAN Manager 2.2.

At Microsoft's Networld announcement, one startled LAN administrator at a Midwestern bank that uses LAN Manager 2.1 said per-node pricing for his DOS and Windows clients had put the price of an upgrade way out of his reach. Microsoft seems "a lot more concerned about the people who are going to buy Windows for Workgroups than about us who have already bought LAN Manager 2.1," he said.

However, Ruth Warren, Microsoft's product manager for LAN Manager, said, "We are seeing more and more multiserver LANs; if those 100 users all attach to the same five servers and they upgrade to [LAN Manager] 2.2, the cost of the upgrade is just $43 per server per seat. And if they upgrade their desktops to Windows for Workgroups at the same time, the cost of their connectivity is almost nothing."

APPI Forum forms to develop SNA network

BY ELISABETH HORWITT
CW STAFF

MOUNTAIN VIEW, Calif. — Support began polarizing last week between IBM's Advanced Peer-to-Peer Networking (APPN) protocol and Cisco Systems, Inc.'s upstart Advanced Peer-to-Peer Internetworking (APPI) protocol, following the unveiling of the membership of the APPI Forum.

Founding members of the forum, the self-appointed task of which is to develop an "open, TCP/IP-oriented solution to SNA peer-to-peer networking," will meet for the first time at Interop '92 Fall in San Francisco next week.

The forum's goal is to submit a full APPI specification to the Internet Engineering Task Force (IETF) by mid-1993, Cisco said. Official approval of APPI by the task force is expected within two years, the company added. IETF is a standards body that oversees such protocols as Transmission Control Protocol/Internet Protocol (TCP/IP) and Simple Network Management Protocol.

The 13 founding members are Cisco, Digital Equipment Corp., Hewlett-Packard Co., McData Corp., Netrix Corp., BT, Proteon, Inc., Sun Microsystems, Inc.'s SunConnect division, Cascade Communications, Alcatel Co., Cabletron Systems, Inc., SynOptics Communications, Inc. and Infonet Services Corp. Cisco said it will release additional names shortly.

Hassle-free

Cisco announced in late August that it would work with industry partners to develop APPI as a way of letting users route Systems Network Architecture (SNA) traffic over internetworking backbones using TCP/IP routing protocols [CW, Sept. 7]. This would save end users the expense and trouble of implementing and supporting an entirely new routing architecture (IBM's APPN) on their networks, Cisco said.

While joining the task force does not commit a company to implementing APPI in its products, members did say that they saw APPI as a potentially more open, standards-based, customer-friendly internetworking standard than APPN.

"The APPI Forum is open to anyone who wants to join" and is oriented toward standards-based, open protocol routing, a DEC spokesman said. "APPN is providing yet another alternative [to SNA internetworking] that is less open, since IBM sells the license and retains the right to change it." DEC is "looking at how and when [it] would implement APPI," he said.

IBM said it was not yet prepared to respond to the task force announcement. However, Wellfleet Communications, Inc. and 3Com Corp. responded by reaffirming their commitments to implementing APPN in their products.

3Com is on track with plans announced last spring to release an APPN Network Node product by the end of next year, a spokesman said. 3Com expects strong demand for APPN from a growing number of customers that are implementing IBM's Advanced Peer-to-Peer Communications protocol on their personal computer local-area networks, he added.

Task force members Cabletron and Cisco announced intentions to support both APPI and APPN. HP "hopes to support APPI if it lives up to what it is purported to be," a spokeswoman said. While the company has not yet licensed APPN from IBM, HP can support APPN through its existing licensing agreement with Wellfleet, she added.

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Del Monte reaps fruits of IS overhaul

CONTINUED FROM PAGE 1

food processing industry that "are very sophisticated" computer users, according to David Leibowitz, senior vice president at American Securities Corp., a brokerage firm in New York.

The twisted financial past of the No. 1 fruit and vegetable processor in the U.S. had sometimes stunted the firm's technology progress. Del Monte started life as a brand name, not a company. It eventually became a subsidiary of R. J. Reynolds Industries in 1978, then merged with Nabisco Brands, Inc. when Reynolds bought Nabisco in 1983.

Del Monte wanted to revamp manufacturing systems back then, but corporate computing needs came first, said Ibrahim Mussa, director of manufacturing systems and telecommunications. However, a leveraged buyout by Merrill Lynch & Co., Del Monte managers and private investors in 1990 greased the wheels of technological change. Once Del Monte was on its own, it had more freedom to spend where management saw fit, Mussa explained.

"We [in manufacturing] had been in the backseat for so long that once we got the funding, we were more than ready to tackle" the AS/400 project, Mussa said.

The shaky shape of Del Monte's Series/1s also motivated the company to overhaul its information systems. The machines required a lot of maintenance time and personnel time because of frequent breakdowns, according to Mussa. The downsizing was "an operational necessity," he said. "We didn't want to chance not making it through the next growing season."

Staff from Del Monte's IS group teamed with integrators and software developers from Electronic Data Systems Corp. to rewrite applications and set up wide-area networks connecting facilities in 14 states. The whole shebang came in on time and within the $12 million budget, too.

Teamwork had a lot to do with the job's success. Four groups of Del Monte IS staff and EDS workers recruited users and managers at processing and cannery plants to lay down the law on what the revamped systems should look like and which new functions were to be added.

That saved much bickering and miscommunication, according to Hank Caputo, Del Monte's manager of manufacturing systems development. The two-year effort "would have taken four to five years if we didn't have teams," Caputo estimated.

IBM beat out Digital Equipment Corp. on the hardware side for a few reasons. For example, poor experience with DEC field service on VAXs used in a frozen-foods division tipped the scales in IBM's favor, as did DEC's "worrisome" financial statements, Mussa said. Plus, the AS/400 "is new technology, whereas the VAX is trailing edge," he added.

That AS/400 technology, combined with custom software designed by teams of EDS and Del Monte personnel, has paid off. For example, the accuracy of harvest forecasting — and therefore packing and finished product predictions — has improved under the new system, while processing time has decreased. Plant managers previously entered crop counts and farmers' work hours into dumb terminals connected to Series/1s, which sent the data to an IBM mainframe in San Francisco. A day or more passed as reports were generated; then another several hours or more lapsed as data was cross-checked and corrections were made.

The new setup, with System Software Associates, Inc.'s Business Planning and Control System manufacturing package at its core, sports snazzy graphical interfaces customized for Del Monte's specialized applications, such as farmer payroll.

Now all plant and cannery data processing is done locally, with only weekly summaries sent to headquarters. Users said they particularly like the AS/400's internal database.

Users are also freer now to invent better ways to do their jobs. Tasks such as what-if analyses are now possible for, say, predicting crop growth under certain weather conditions. Temperature and humidity are keyed in regularly and calculated against standard farming variables for each kind of crop. Growers can predict, within a couple of days, when a plant will be ripe and how much the crop is likely to yield.

"Before, we never had the time to think proactively. We were too concerned about whether the computers would fail and how long it would take to get our reports back," said Doral Nelson, plant controller in Crystal City, Texas, one of 32 Del Monte plants nationwide.

William Mercer McLeod

Del Monte's Mussa: *'We had been in the backseat for so long that once we got the funding, we were more than ready to tackle' the AS/400 project*

Downsizing fruits

Del Monte's switch from lumbering Series/1s to AS/400s will reduce current and long-term costs

Project budget	$12 million
Estimated savings on maintenance	$1.5 million annually
IS staff impact	Reduced by 55%, from 240 to 105
Systems	6 AS/400 Model D50s, 18 AS/400 Model C6s, C10s, B35s
Applications	System Software Associates' manufacturing and CASE software
Service	EDS integration, development
Communications	Sprint, providing 19.2K and 14.4K bit/sec. transfer rates

Source: Del Monte Foods

CW Chart: Stephanie Faucher

Apple set to unveil four PowerBooks

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. is slated to unveil today four slim new models in its successful PowerBook portable line, including two that can be docked to desktop machines.

The company also plans to beef up its Macintosh II mid-range offerings with the addition of the Macintosh Models II VI and II VX, both based on Motorola Inc.'s 68030 microprocessor.

However, Apple officials said that only the 33-MHz Macintosh II VX will be available domestically because the recently introduced Performa line duplicates some of the functionality of the 16-MHz Model II VI.

Apple's latest portable offerings are the PowerBook Duo 210 and 230, which feature a desktop docking mechanism. The 4.2-pound notebooks feature a backlit supertwist display with 640- by 480-pixel resolution and 16 shades of gray. Prices for the 210 and 230 begin at $2,249 and $2,609, respectively. Both also require the $1,079 Duo Dock for desktop use.

Also on the rollout schedule are the $2,429 PowerBook 160 and the $3,869 PowerBook 180. The Model 160 PowerBook features a backlit supertwist LCD screen, while the 180 offers an active-matrix design.

Worth a look

Users said the new models, particularly the dockable PowerBook Duo, will get a close look. "They sound very intriguing," said Richard Lester, vice president of information services at Associated Grocers, Inc. in Seattle. Lester said the firm's salespeople now use Macintoshes, but the machines are "nailed to their desks." A dockable portable could provide the best of both worlds for work done both in the office and on the road, he said.

In the year since they were introduced, Apple has sold 400,000 PowerBooks and turned the sleek portables into a billion-dollar business, according to product manager Bruce Cooper. Unlike the way it fumbled the ball in the portable market when it delivered a late and heavy machine, Apple may have timed the PowerBook perfectly.

Sales of notebook personal computers are expected to make up more than half of the nearly 5 million mobile PCs projected to ship in 1995, according to Norwalk, Conn.-based research firm Inteco Corp.

Portable lock

The portability of notebook computers also makes them a tasty target for thieves with nimble fingers, so Apple has added an extra feature to the new PowerBooks to make sure they stay in the hands of their owners.

The new machines feature a small slot built into the back of the machine in which users can install a locking device built by San Mateo, Calif.-based Kensington Microware Ltd.

Kensington's MicroSaver Security Standard features a 6-ft galvanized steel cable that can be wrapped around any immovable object while its locking end is slipped into the PowerBook slot and fastened. Removing the device without a key is reportedly next to impossible, and attempts to do so will damage the computer.

Kensington's device has gained increasing acceptance from portable computer makers in recent months and can also be found in lightweight PC models made by Compaq Computer Corp., AST Research, Inc. and Toshiba America Information Systems, Inc.

JAMES DALY

CORRECTIONS

The article "Pen computing sparks interest" [CW, Oct. 5] mistakenly referred to the Pen-based Expo in Los Angeles by the wrong name.

.....

A chart on Apple Computer, Inc.'s PowerBook notebook family [CW, Oct. 5] was based on information supplied by the CW Database Division.

.....

In a story on Digital Equipment Corp.'s strategy for massively parallel computing in the Oct. 12 issue, a sentence that said DEC will ship Intel Corp. I860-based systems should have said that DEC's Paragon-based Intel systems will ship next summer. The I860-based systems began shipping last month.

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Users look to groupware to increase business efficiency

BY JOANIE M. WEXLER
CW STAFF

DALLAS — The explanation for the steady crowds at the groupware booths at Networld '92 last week ran deeper than the free T-shirts most were giving away.

Many users said the groupware concept of sharing databases, electronic calendars, messaging systems and other services designed to streamline business tasks involving groups parallels their current missions to reorganize how they work. Their goal is to accomplish more without adding staff, and groupware may just be the ticket.

"Groupware fits our current re-engineering efforts because we're being asked to do more with the same or fewer resources," explained Roger H. Allott, an assistant district attorney in Englewood, Colo. He is also a Futurus Corp. team groupware user who heads up a data technology planning committee for prosecutor offices in the state.

Aside from Futurus, other packages drawing on groupware concepts that drew throngs at the show were Lotus Development Corp.'s Notes, Microsoft Corp.'s Windows for Workgroups and WordPerfect Corp.'s WordPerfect Office 4.0 and InForms 1.0 package for designing and maintaining business forms on a local-area network.

Part of the time-saving and streamlining strength of groupware builds on its automated updating features, a concept that first caught hold in stand-alone spreadsheet applications such as Lotus 1-2-3, which update all affected numeric values when a given value changes.

"A file stored on your machine automatically updates across the network on files you've shared," said Nan Scott, a network manager at Oregon State University in Corvallis, Ore. She is embarking on a groupware search and expressed interest in Microsoft's Windows for Workgroups. "In this economy, time is valuable; we just can't be duplicating tasks and re-entering information."

A needed boost

Greg Scott, computing services manager at Oregon State, added that packages such as InForms have probably given groupware a shot in the arm because they focus on a single groupware task, which is more understandable to decision makers trying to envision concrete benefits of the technology.

"To date, the groupware concept has been so hard to explain, it's been hard to sell to the boss," he said. "Having an application this defined allows people to get their arms around groupware and ease into it."

He evaluated Notes, for example, which he said is "too all-encompassing and still too expensive" for many organizations to turn to whole-hog. In recognition of this sales barrier, Lotus has taken steps to make smaller Notes modules available through third parties.

Hooray! Mix and match!

Users attending last week's Networld '92 Dallas applauded the beginning of a movement by messaging vendor Beyond, Inc. in Cambridge, Mass., toward mix-and-match groupware. One analyst likened the concept to a trend in network management to plug applications of choice into standard platforms.

Beyond rolled out a version of its electronic-mail system that can swap into Notes in place of Notes' integrated mail package.

Most users said they like the idea because they are unwilling to sacrifice the E-mail system they are familiar with to move to groupware. "You have to beat lawyers with a baseball bat just to turn on their computers, let alone get them to switch technologies," said Roger H. Allott, an assistant district attorney in Englewood, Colo.

Gold Bond Building Products in Charlotte, N.C., is just entering the LAN world and intends to move to groupware in one fell swoop, said Joseph A. Barretet, senior technical consultant.

JOANIE M. WEXLER

Lotus' Notes achievers lauded

Winners and presenters of Lotus' Notes awards, *announced at Networld '92, from left: Bruce Hitchcock, Lotus; Todd Hayes and John Vidolich, J & T Associates; Mike Kinkead, SandPoint Corp.; Neal David and Kevin Danehy, Millipore Corp.; Richard Werbin, Chase Manhattan Bank; Gary Beach, publisher of* Computerworld*; Dian Uher, EDS/Dallas Helps; Michael Monahan, Virtual Corp.; Terry Rogers, Lotus; David Marshak, Patricia Seybold Group. Missing from photo is Ralph Arvesen, Dell Computer Corp.*

IBM unveils 32-bit LAN Server for OS/2

BY MICHELE DOSTERT
CW STAFF

DALLAS — IBM upped the stakes in the network operating systems arena last week at Networld '92 when it unveiled a fast, 32-bit version of LAN Server for OS/2.

Better throughput comes as welcome news to large LAN Server users, such as David B. Feldman, a network administrator at MCI Communications Corp. here. "It will probably be the fall of 1993 before we convert, but we will surely need the added performance by then," he said. "We run a lot of imaging and other large applications" — many of which the firm plans to rewrite in OS/2 — "so true 32-bit performance is very important to us."

IBM's LAN Server 3.0 is only the second 32-bit local-area network operating system. The other is Novell, Inc.'s NetWare v3.11. Microsoft Corp.'s Windows New Technology-based LAN Manager operating system has yet to be released.

Fear of commitment

IBM's LAN Server line was based on LAN Manager technology jointly developed with Microsoft. In the public battles between IBM and Microsoft over OS/2 vs. Windows, many LAN Server users feared IBM would market Novell's NetWare and abandon LAN Server.

However, while IBM does resell NetWare, it has also continued development of LAN Server for use under OS/2.

According to IBM, LAN Server 3.0 has all the functionality of the Microsoft 2.1 LAN Manager and adds enhancements developed by IBM, such as the ability to be remotely installed across a network via IBM's recently announced Automated Configuration, Installation and Distribution technology. Microsoft last week announced LAN Manager 2.2 (see story at right).

LAN Server 3.0, which can support up to 1,016 concurrent users on a single LAN, comes in two packages. OS/2 LAN Server-Entry is aimed at the departmental market and includes new system management features and enhanced installation support.

LAN Server 3.0-Advanced adds a high-performance file system, support for the multiprocessing capabilities of IBM's Personal System/2 Model 295 PC and enhanced fault tolerance, which supports both disk duplexing and disk mirroring.

IBM also announced OS/2 LAN Server for Macintosh Version 1.0. Scheduled to be available in January, it will provide access to Apple Computer, Inc. AppleTalk servers and printers and will allow DOS, Windows, OS/2 and Apple Macintosh clients to access files created by one another.

LAN Server 3.0 is available now; customers who buy it before Dec. 31 can buy LAN Server-Entry for $645. LAN-Server Advanced will be priced at $1,795. Each requestor (client software) will cost $50.

LAN Man quandary

Microsoft's unveiling of LAN Manager Version 2.2, an enhanced version of its OS/2 1.3-based local-area networking operating system, got a lukewarm response from users at Networld '92.

While many were positive about the features added to the latest release, that enthusiasm was dampened in some cases by a greater interest in a 32-bit version of LAN Manager and in others by a general uncertainty over LAN Manager's future.

"We're uneasy about LAN Manager's future. Are they going to roll it into NT, and we'll end up orphans if we stay with OS/2 desktops?" one user asked.

The release adds centralized, Windows-based management and utilities that allow users to manage remote LAN Manager servers from a central site.

Some LAN Manager users said they were undecided about whether to upgrade to LAN Manager 2.2 or wait for the Windows NT-based, 32-bit version of LAN Manager, which Microsoft has promised to ship with Windows NT in early 1993.

James C. McNall, a systems coordinator at Allen-Bradley Co. in Mequon, Wis., said, "We're probably moving to Windows for Workgroups, and I like the new Windows-based management stuff in LAN Manager 2.2, so we'll probably upgrade. But what I'm really waiting for is the Windows NT version," McNall said.

MICHELE DOSTERT

Novell targets upcoming NetWare 4.0 at corporate IS

BY MICHELE DOSTERT
CW STAFF

DALLAS — Novell, Inc. is counting on the latest revision of its NetWare operating system to break through the barriers to full acceptance by corporate America.

Executives at the Provo, Utah-based vendor said the technology added to NetWare 4.0 was designed to assure large information systems departments that they can depend on NetWare local-area networks as redundant for mission-critical applications.

However, Novell will have to wait for user reaction. First, it quietly admitted at last week's Networld '92 that delivery of NetWare 4.0 will not be until early 1993. It was supposed to ship by year's end.

Second, two features sought by large network users will not be in NetWare 4.0: large LAN support and the ability to run applications in protected memory. High-level system functions such as optional pre-emption, virtual memory and asymmetric multiprocessor support will also not be in the release.

However, company officials did announce shipment of a software developer's kit for NetWare 4.0, as well as the System Fault Tolerance III product for NetWare v3.11.

Delay not a concern

The short delay is not considered significant, since about two-thirds of Novell's customers still use NetWare 2.2, observers said.

The impetus behind the changes in NetWare 4.0 can be traced to fallout from a reseller deal with IBM.

"After IBM began reselling NetWare in 1991, it opened up a two-way dialogue between corporate IS and Novell that we hadn't had before," said Darrell Miller, executive vice president at Novell.

"They told us what they needed before they would adopt our platform, and we went back and built those things into NetWare 4.0," Miller said.

Specifically, NetWare 4.0, in conjunction with other products from Novell, will add directory and naming services, fault tolerance and network and software manageability.

With the release of NetWare 4.0, Novell has promised to provide a distributed directory and naming service that can be automatically replicated and synchronized across all NetWare servers on a LAN.

"We have 15 to 20 NetWare servers, so a distributed directory is really attractive to us," said Robert Cox, a data communications analyst at Methodist Hospital of Indiana in Indianapolis.

"The ability to manage all our E-mail and so forth across the whole system is why we're looking into 4.0," Cox added.

Dealing with space

Because NetWare was originally an 8-bit system, name-space limitations enforced a 256-user-per-server limit. Novell built a work-around into Version 3.11 that would theoretically allow 500- and 1,000-user licenses. However, the work-arounds so constricted the LAN administration utilities as to be impractical.

According to Novell, it has rewritten these utilities and will offer 1,000-user versions. However, this 1,000-user version is not expected with NetWare 4.0 but with a future release.

Also slated for future release is the ability to run applications in protected memory. Currently, NetWare 3.11 applications, called NetWare Loadable Modules (NLM), run in the same space occupied by NetWare itself — ring 0 of an Intel Corp. chip.

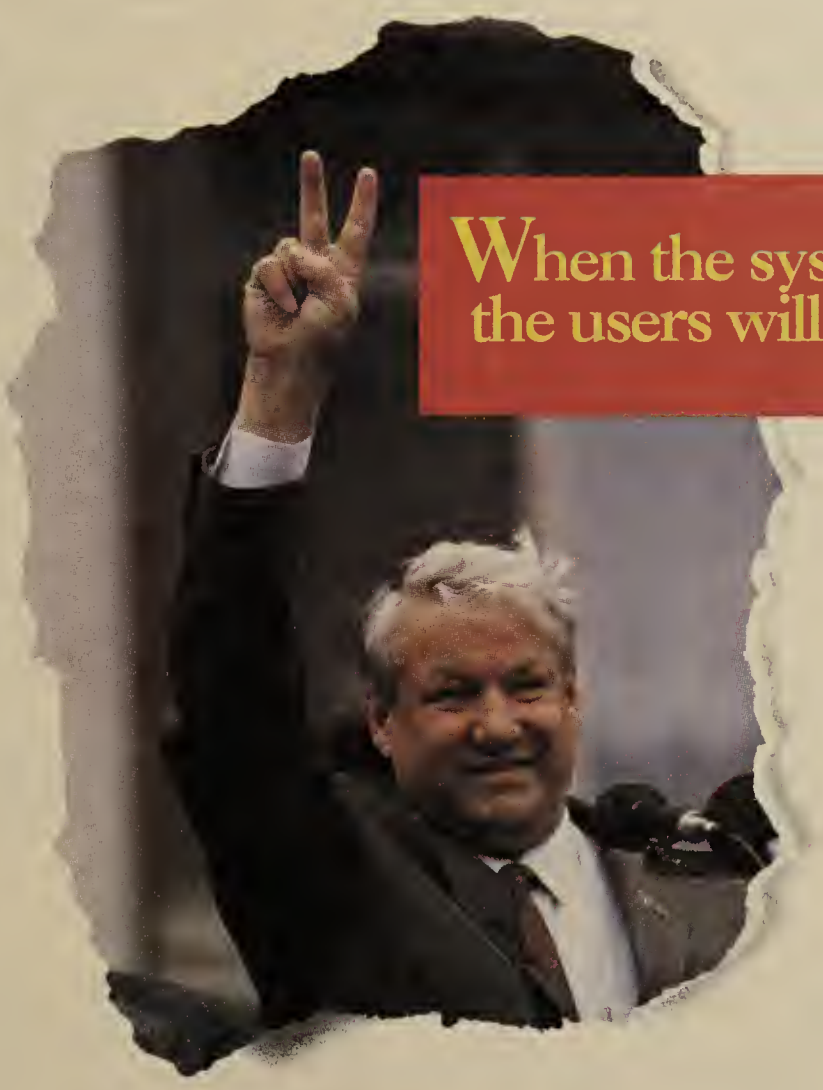
Mark Murphy, data processing manager at the Worthington, Ohio, office of Integrity Life Insurance Co., said, "About half of my server crashes are caused by NLMs, so I would love to be able to load my applications into protected memory. When that comes out, I'll probably upgrade to [that version of NetWare]."

Novell pointed to two of its products — not part of NetWare 4.0 — as keys to easing network management headaches. They are NetWare Management Service, which can report to NetView or Simple Network Management Protocol-based network management systems, and the recently released software distribution product, Electronic Software Distribution.

Willing to wait

Although large LAN users applaud the technology in the 4.0 release, they did not seem disturbed by the delay. In fact, most said they plan to wait for a few more revisions to NetWare 4.0 before they move to it.

Galen Bergthold, a LAN analyst at the Johnson County Data Services Department in Olathe, Kan., is also cautious. "I need the directory services, but from what I hear, not all NetWare 3.11 NLMs will run on 4.0. That could make for a messy upgrade, with different versions of the LAN OS and different versions of applications all over the place. I do plan to upgrade, but I'll just sit back, check the CompuServe bulletin boards to see how 4.0 is doing and let it all shake out for awhile."



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NEWS SHORTS

Lotus results off, Apple up

Lotus Development Corp. released financial results last week that speak volumes about its difficulties in the Windows applications market. Third-quarter revenue fell 6% to $218.8 million, and operating earnings totaled $7.3 million, a big drop from the $21.5 million earned in the third quarter last year. Net earnings were up, but most of the increase was from Lotus' sale of stock in Sybase, Inc. during the last three months. Meanwhile, Apple Computer, Inc. posted record results for 1992's fiscal fourth quarter, even amid a PC price war. Macintosh sales jumped 35%; PowerBook portables contributed $1 billion to Apple's coffers in their first year on the market.

ISSC gets into insurance

IBM's outsourcing subsidiary, Integrated Systems Solutions Corp., has agreed to jointly sell outsourcing services to the insurance industry with software provider The Continuum Co. in Austin, Texas. What makes this alliance especially interesting is that IBM has an equity interest in Continuum competitor Policy Management Systems Corp.

WilTel demonstrates frame relay

WilTel, a Tulsa, Okla.-based interexchange carrier, last week said it had demonstrated a frame-relay packet data connection among four regional Bell operating companies. In the test, WilTel's WilPak network linked WilTel's Technology Center in Tulsa to a Nynex Corp. lab in White Plains, N.Y., a Southwestern Bell lab in St. Louis, the US West lab in Minneapolis and the Ameritech lab in Hoffman Estates, Ill. The trial will test host-to-host connectivity, interactive sessions and transfers of large files using a variety of port connections up to T1 speeds.

Cincom delays Supra upgrade

Cincom Systems, Inc. in Cincinnati has pushed back the launch date of the new version of its Supra database management system. Version 3.0 was originally scheduled to be out by October 15. Instead, a company spokeswoman said, Cincom will introduce later this year an interim release, Version 2.4, and will try to position Supra as the "open database server of choice," she said. No other details were available.

Report criticizes productivity focus

Too much management focus on individual productivity rather than on overall business process advances has resulted in an unfairly harsh report card for investment in end-user computing, according to Nolan, Norton & Co., a Cambridge, Mass.-based consulting firm. Nolan, Norton is basing that conclusion on a recent survey of 10 major U.S.-based organizations.

Hyundai stages PC blitz

Hyundai Electronics Industries Co.'s information systems division rolled out some 60 new models of servers and desktop PCs last week. The announcement includes a new high-performance line of upgradable servers and desktops, a multimedia-capable line, two new notebooks and two new low-priced lines, called Prestige and Elite. Company President Ed Thomas told reporters that Hyundai needed only six months to create the new products and that in the future, Hyundai will refresh its product line every five to eight months.

Short takes

Banyan Systems, Inc. Executive Vice President Roger Weismann will leave on Jan. 31. The six-year Banyan veteran has decided to pursue business opportunities on his own but has not decided on his next career move, Banyan said in a prepared statement. . . . **Digital Equipment Corp.** shifted Don Zereski from his position as vice president of DEC's U.S. area to work under Jack Smith, DEC's senior vice president of operations. Zereski will be responsible for developing programs to increase revenue for the ailing company. . . . **Unisys Corp.** has been awarded a 10-year, $73 million contract to provide the New York State Department of Social Services with a wide range of hardware, software and professional services.

Varied themes at Networld '92

Election, Lotus and Microsoft products, APPI vs. APPN top the agenda

Networld '92 Dallas featured an exhibit where show attendees could not only look at Lotus' Notes applications but also cast their votes for president. At noon on Thursday, as the show was winding down, the totals stood at 30% for Clinton, 30% for Bush and 17% for Ross Perot; the balance of the voters were undecided.

A Lotus Notes groupware user who received a *Computerworld*-sponsored award at Networld for his firm's creative uses of the database-oriented package confided in a reporter that Lotus is struggling to provide adequate service and support now that its products are becoming networked and mission-critical. "The company's history and experience are with supporting stand-alone applications that individually couldn't bring a business to its knees," he explained.

Lotus' vice president of marketing, Frank Ingari, told *Computerworld* on the show floor that Notes' biggest challenge is Microsoft's looming object-oriented groupware package, codenamed "Cairo." Ingari said Lotus' goal is to permeate the industry with 10 million or so Notes seats before the competing product ships. That probably gives Lotus roughly 12 to 18 months to turn 150,000 users into millions because Microsoft's Bill Gates stated last month that Cairo would be first demonstrated in about a year.

And speaking of Microsoft . . . Users are perplexed as to why the vendor was yet again cheerfully demonstrating its Windows for Workgroups package (rumored to be in production and shrink-wrapped already) while emphasizing the product won't be "officially announced" until Oct. 27.

At least some folks around router company Wellfleet Communications seem a little on the defensive by the attention competitor Cisco Systems has received with Advanced Peer-to-Peer Internetworking (APPI), its budding alternative to IBM's Advanced Peer-to-Peer Networking (APPN) strategy for migrating Systems Network Architecture networks to distributed internetworks. A Wellfleet employee was overheard propositioning an IBM local-area network systems executive on the show floor to "link arms with Wellfleet on APPN and take over the industry" as an APPI counterstrike. Alas, the Cisco rival accosted the IBMer with responsibility for the IBM/Apple alliance, not the one in charge of APPN development.

Some eyeballs were rolling over Novell's "Yes" campaign, kicked off at the show, which features the networking giant's familiar red and white logo plus the word "yes" (or equivalents such as "si" or "oui" in other languages) on packages of all products that are NetWare-compliant. First, users are not sure what it means because Novell takes the word of third-party vendors' in-house tests rather than certifying the equipment itself. The consensus is that the marketing ploy to underscore NetWare's omnipresence is probably unnecessary.

JOANIE M. WEXLER and MICHELE DOSTERT

Ethernet longevity to stave off upgrade pain

CONTINUED FROM PAGE 1

an entire 10M bit/sec. Ethernet to each video server and to individual workstations or a limited number of workstations to pump more life into today's omnipresent Ethernet adapter cards and wiring schemes.

"I'm charged with improving network design to let us keep growing without having to turn to FDDI, its copper alternatives or other technologies" that are a technologically radical, expensive departure from what is already installed, said Gordon Craig, local-area network administrator at the Texas Rehabilitation Commission in Austin. Craig is a newly signed Kalpana customer who attended his vendor's video-over-Ethernet demonstration.

Craig said he evaluated FDDI to the desktop about five months ago but did not think he needed the LAN's order-of-magnitude higher speed yet and thus could not justify its comparatively expensive costs. In addition, he said, "I don't want to have to keep starting over" with the network.

Glen M. Greenwald, network manager at trading firm Miller, Anderson & Sherrerd in West Conshohocken, Pa., echoed this worry. "We just moved into our current building two years ago and outfitted it with 10Base-T," he explained. "I have my investment in 10Base-T equipment and unshielded twisted-pair, while FDDI is still a new, unproven technology."

Answers sought

Greenwald, who also attended the Kalpana demonstration, added that "while multimedia is coming," his network is not in jeopardy of maxxing out today. However, he said he was looking to "find the answers first" in anticipation of a network traffic surge he suspects will result from his imminent upgrade to more powerful desktops — such as Intel Corp.'s I486 and Unix-based machines — that can dump traffic onto the network faster.

"We're all tight for money," added Terry Smith, an engineer at Rockwell Shuttle Operations Co. who is orchestrating the NASA/Department of Defense's current downsizing project.

Smith said his network is being stressed by the sheer size of typically 2M-byte Microsoft Corp. Windows files being downloaded across the network.

The dedicated Ethernet scheme "would preclude my going out to FDDI," he said.

One attendee who found the Alantec demonstration intriguing said he was nonetheless disheartened by the myriad Ethernet demos. That was because his employer, the U.S. Central Credit Unit in Overland Park, Kan., is a large Token Ring shop. There were no life-extending demonstrations on the show floor for Token Ring.

"We're about to start desktop publishing and imaging applications," which will probably cause a network spurt, explained Jeff Hatfield, manager of technical services.

IBM, however, does intend to demonstrate multimedia applications on 16M bit/sec. Token Ring networks at the Comdex/Fall '92 trade show in Las Vegas next month.

"The bottom line is, contrary to popular belief, you don't need 100M bit/sec. networks or ATM for multimedia," said Charlie Robbins, director of communications research at Aberdeen Group, a Boston consultancy. "You do it with digital compressed video."

Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif., agreed. According to Howard, a recent Infonetics study revealed that many users believe they require the new-generation networks for multimedia applications.

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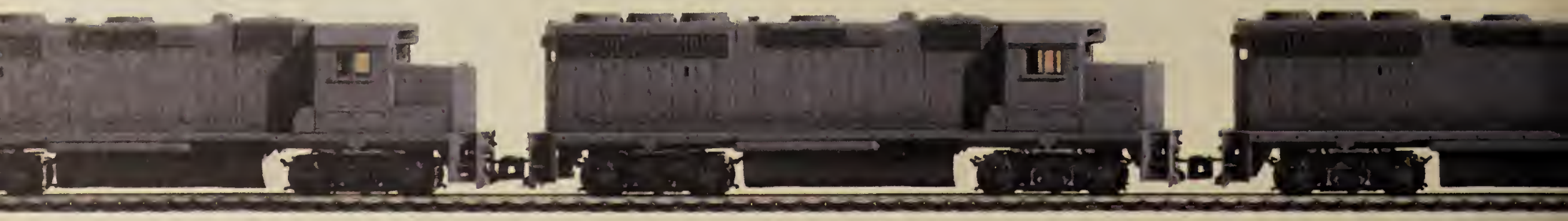

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Pay first, payback later

CONTINUED FROM PAGE 1

downhill. Rewards come in the form of quick development time, reuse of code and dramatically lower maintenance costs.

Stikeleather, for example, said a pilot C++ warehouse application installed in February boosted workers' productivity 35%. "Labeling happens faster, there are fewer errors, and we have better control over activity in the warehouse," he said.

Object code also has the potential to reduce the firm's software maintenance costs from more than 60% of the software budget to less than 20%, he said.

Pilot projects

Like Kash n' Karry, early users at some of the nation's largest IS sites are fielding their first object-oriented applications on a limited basis this year. The new applications are often standalone, icon-based tracking systems that target one tactical piece of business. If these first attempts are successful, users said, object-oriented programs, application development tools and databases could become common by 1995.

"The technology has been there, but many organizations' corporate cultures didn't have the right kinds of skills to take advantage of it," said Mike West, an analyst at Gartner Group, Inc. in Santa Clara, Calif.

An informal survey of 175 users attending a June 1992 Gartner Group conference showed that 47% of the respondents had already experimented with object-oriented products, West said. Another 20% had developed pilot projects, while 9% had put object-oriented systems into production.

The promise of object technology lies in its ability to mirror real-world business operations far better than does traditional procedural programming in the Cobol and C languages.

Once created, objects can be used again, reducing development and testing time for future projects by 30% or more, users said, and saving money as well.

shield the programmer from having to navigate an increasingly complex IS infrastructure. Objects may actually "creep in" to IS shops under cover of fourth-generation languages, tool kits or network operating systems.

CSX Transportation Corp., a Jacksonville, Fla., rail freight system, created a locomotive object that contains direct knowledge of a locomotive's fuel mileage and hauling capacity. Planners at CSX's operations center save valuable time when calculating systemwide fuel consumption by clicking on several locomotive objects. There is also a family of related objects in the firm's container-tracking application.

Users like CSX can get a head start on their application by buying a set of predefined objects, known as a class library. "You're building applications within a framework, using a set of software that's well-tested, wrung out and very stable," explained Art Masson, head of systems development.

"Our applications took a great turn for the better in terms of testing and stability," he said, echoing comments from other users.

There are some shortcomings to using object-oriented programming tools. Applications developed with this bold approach sometimes fit poorly with systems built using procedural languages such as Cobol and C. Early users reported having to write custom links between object-oriented applications and existing relational databases. The lack of standards for objects is another hurdle to widespread adoption but is being addressed by the Object Management Group, a standards group based in Framingham, Mass.

"We feel the quality of the product we delivered was very high," said Dennis Styles, a senior systems analyst at American Airlines' Sabre Computer Services Division. Styles led a project that developed several flight-dispatching applications at the airline's Fort Worth, Texas, operations center.

American's three object-oriented programs, used by 160 flight dispatchers to monitor 2,600-plus flights daily, were built in six months.

At Kash n' Karry, Stikeleather is also moving ahead. His firm is considering removing its IBM mainframe by 1996 and relying instead on an intelligent network of Sun Microsystems, Inc. Unix clients and servers that will shuttle objects among headquarters, warehouses and 100-plus stores.

"Our goal is to roll our system out to all our stores over the next three years," he said. "The new systems we're producing have much lower failures rates, we're producing code three times faster than we did in Cobol, and the best part is we can use the code over and over again."

Exponential growth

Sales of object-oriented technology have been growing steadily, with the most significant gains in the object-oriented DBMS market

Revenue forecasts for object-oriented products (in millions of dollars)

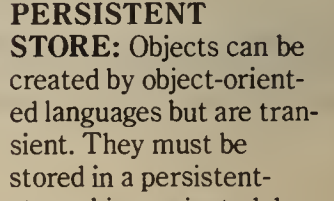
	1991	1992*	1993*	1994*	1995*
Languages and tools	$201	$260	$317	$369	$416
Tools for developers	$84	$121	$172	$238	$319
DBMSs	$19	$47	$96	$167	$255
CASE tools	$23	$33	$45	$61	$98
Total products	**$327**	**$461**	**$630**	**$835**	**$1,088**

*projected

Source: Ovum Ltd.

CW Chart: Stephanie Faucher

GLOSSARY



OBJECT: An entity containing data and programmatic behavior. Once an object type is created, it can become the foundation for others. Users can create extensions to object code through object-oriented "inheritance," reducing the need for new programming.

CLASS LIBRARY: A collection of objects that may be derived or related to one another, in specific categories called classes. Example: A pharmaceutical firm creates a class library of drug compounds, which share properties.

PERSISTENT STORE: Objects can be created by object-oriented languages but are transient. They must be stored in a persistent-store object-oriented database to be accessed by programs and users.

LANGUAGES: Object-oriented languages such as C++ support the key concepts of object-oriented programming: classes, objects, instance variables and methods. Unlike traditional languages, object-oriented languages make it possible to group variables and operations in a single entity.

Technology simulates imaginary worlds

Object technology allows computer scientists to dream up worlds that have never existed — and to simulate them electronically.

That is because complex geometric objects and complex relationships between objects can be created with object-oriented languages and stored in object-oriented databases.

Pacific Bell in San Ramon, Calif., is using ParcPlace Systems, Inc.'s Smalltalk 80 object-oriented language to define high-speed broadband network "circuits" for use in the year 2000. The 155M bit/sec. broadband line that carries the broadcast — the equivalent of 2,000 standard phone lines — does not yet exist.

But in the laboratory, icons appear on a computer screen warning of an incoming "call" that might be a videoconference, a television broadcast or a university seminar. Without objects, it would have been difficult — if not impossible — for Pacific Bell to define the prototype system and to create a visual user interface for it, technical consultant Tom Soon said.

"To do a simulation using Fortran, you have to write lots of supportive routines," Soon said. "If I started from scratch, it would go beyond the resources I have for my project."

Mark Woyna, an assistant scientist at Argonne National Laboratory in Argonne, Ill., is modeling the battlefield of the future for the U.S. Army. His object-oriented system — Visual Intelligence and Electronic Warfare Simulation Workbench — uses simulated input from battlefield sensors to map out the march of battalions and the routes of tanks across an imaginary war zone.

"Users can define [it], and the system paints radios and tanks on the screen," Woyna said. "What used to take months can now be done in a day."

JEAN S. BOZMAN

Kevin Horan

Argonne's Woyna *used OOP to develop an Army battlefield simulator (shown projected onto his shirt)*

Tom Zimberoff

Pacific Bell's Soon *says the project would have been difficult — if not impossible — without objects*

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Source: Dataquest Ledgeway, 7/92.

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IBM

Feds reverse overtime ruling

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Department of Labor, in a policy reversal, has revised its regulations so that salaried programmers are exempt from mandatory overtime pay no matter what they earn.

Last year, the Labor Department held that salaried programmers would be exempt from the mandate for 150% overtime pay only if they earned more than 6.5 times the minimum wage, or $27.63 an hour.

The change was prompted by protests from the computer industry and members of Congress, who said the Labor Department had misunderstood the intent of the 1990 law on overtime pay for software-related occupations [CW, May 6, 1991]. The law affects thousands of programmers, systems analysts and software engineers.

The two-sentence law — tucked inside a bill on American Samoa — was designed to exempt highly paid software professionals from the Fair Labor Standards Act of 1938, which requires 150% overtime pay. It was supported by the Information Technology Association of America (ITAA) and the National Association of Computer Consultant Businesses.

Under the new regulation, effective Nov. 9, there are two key provisions:

- Salaried programmers are classified as "professionals" and thus exempt from the federal mandate for 150% overtime pay.
- Programmers who are paid on an hourly basis are likewise exempt if they are paid more than 6.5 times the minimum wage.

What upset supporters of the legislation was that the Labor Department had initially mashed the two provisions together, producing a more narrow exemption, instead of treating them separately.

The ITAA said it was satisfied with the revision and argued that the elimination of mandatory overtime pay would make the industry more "price competitive and, as a result, expand the market."

The biggest critics of the law have been free-lance programmers. They argued that time-and-a-half overtime pay is needed to compensate them for the lack of medical benefits and job security inherent in their migrant work.

Michael L. Boling, an independent computer contractor in Madison, Ala., said the law would cost him $25,000 a year. By charging $35 to $40 an hour with time-and-a-half rates for overtime, free-lancers can "reach the elusive $100,000 level that is commonplace among doctors and lawyers," he said in written comments.

John Fain, an ITAA committee chairman and president of Metro Information Services in Virginia Beach, Va., said the law represents "the government's recognition that the high degree of education and skill required to perform this work merits professional status."

The Labor Department noted that the software exemption does not cover hardware engineers or computer users. Also, nothing prevents an employer from voluntarily paying premium rates for overtime.

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Forces join for RS/6000 benefit

BY MARYFRAN JOHNSON
CW STAFF

Users of IBM's Unix-based RISC System/6000 servers can add the dual option of guaranteed uptime and expanded storage capacity to their choices this week, as storage vendor Cambex Corp. and systems integrator Clam Associates, Inc. settle into a market niche left open by IBM.

At AIX Expo this week in San Jose, Calif., the two vendors will demonstrate their ability to integrate IBM's high-availability RS/6000 clustering software with Cambex's new Certainty Array/6000 fault-tolerant storage subsystem. The Certainty Array, a redundant arrays of inexpensive disks system slated to be available in January, will range in price from $50,000 for an 8G-byte array to $720,000 for a 96G-byte array.

"This will appeal to people looking to do some type of highly available midrange database server," said John Morrell, an analyst at International Data Corp. in Framingham, Mass. The Cambex disk array "is nothing extraordinary," he added. "The uniqueness comes from Clam's system integration and the [IBM high-availability] software. That offers something IBM cannot: the ability to have disk arrays with that type of fail-over scenario."

IBM's HACMP/6000 High Availability Cluster Multi-Processing software began shipping in June and has been installed in several dozen sites so far, IBM said. Cambridge, Mass.-based Clam Associates was the only outside developer to work on HACMP/6000 with IBM.

Although the high-availability software handles only a cluster of two RS/6000s now, the next version will handle multiple RS/6000 clusters and is due out next year.

"Anything that will afford large amounts of disk space is definitely welcome," said Craig Engel, vice president of information systems at a large Wall Street investment bank that prefers to remain unnamed in press accounts. With Clam Associates' help, the bank recently installed the HACMP/6000 software on an RS/6000 cluster. "We'd done a lot of overnight batch processing on the RS/6000s, but this was the first on-line system where users couldn't be down," Engel said.

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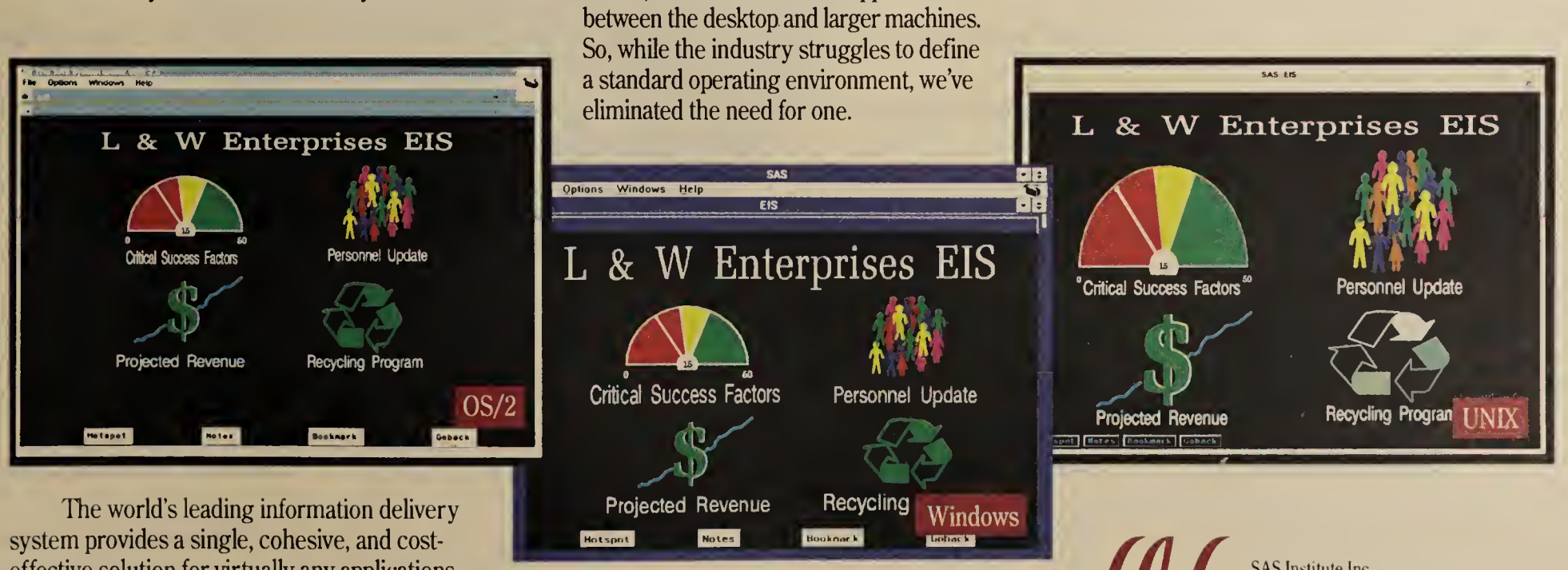

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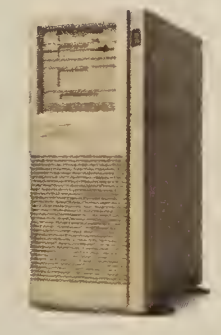

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ADVANCED TECHNOLOGY

IS roundtable: Technologies of the future

Top computer executives see wireless computing, optical discs, greater innovation and integration of tools

BY ELLIS BOOKER
CW STAFF

More than ever, information systems executives and the companies they work for are being pressed to evaluate new technologies. The reason is simple: Advanced computing and communications systems offer competitive advantage for those who figure out when and how to deploy them. Alas, this is no exact science.

A successful investment in cutting-edge technology makes the executive responsible for it a hero, praised for his boldness and daring. But the judgments are never as kind toward early adopters who fall on the proverbial "bleeding edge" of a new technology.

Computerworld recently interviewed three experienced IS executives about advanced technology — how they watch it, what they hope to see in the year 2000 and, most importantly, what figures into their decision-making when the chance arrives to use a promising but little-tried product.

Computerworld spoke with John J. Dell at St. Clair Hospital, Diana Walker at Comdisco, Inc. and consultant Sid Diamond, until recently at Black & Decker Corp.

CW: How do you keep abreast of future technologies?

Dell: Obviously, I read a lot of periodicals, attend conferences and contact specific colleagues who work for consulting firms. I spent eight years in consulting, so I've got contacts there.

Walker: We also find sharing with our customers — what they're using and what their interests are — is valuable. At Comdisco itself we have resident technology experts. People in our strategic systems area evaluate and recommend the use of new products and develop relationships with vendors. And because we offer venture leasing to start-up [technology companies], we've forged relationships with some of them.

Diamond: It's a combination of approaches: reading trade journals, maintaining a close relationship with vendors, discussing things with peers and in-house R&D. People who are successful have to do this. The life cycle for new technologies is shorter (down to two to three years), and the introduction of new products is more frequent. The business is changing, too. So we in IS can't be passive.

CW: What questions would you ask before testing or deploying a leading-edge technology?

Diamond: The first question is, what are your business needs? The second question is, what are your functional needs?

Walker: If I have a technical expert who says "This is great, we ought to use it," I ask questions that will be asked of me by the business committee: Will this solve a business need, and are there other technologies available that do the same thing?

Dell: Effectively, I try to get the vendor to share the risk. They absorb the investment, and on your end, you provide the site. Look at the short term vs. the long term. Is this a foundation for something else?

The benefit may not be in the product itself. This is the case with a network, which is a vehicle for obtaining other benefits. For instance, when we had to choose between Ethernet or FDDI, we chose the latter. A 10M bit/sec. Ethernet would certainly carry you two years, but in three or five years you might need to reconfigure. In this case, short-term costs are lower, but long-term costs are higher.

Walker: Often we'll bring in software and try it. For instance, we just prototyped our first agent software. It's from a start-up company.

Diamond: Who do you put your bets on, partner with, to take you through to the year 2000? The picture is muddied because hardware has become a commodity and because of the workstation and LAN phenomenon.

Diana Walker is assistant vice president responsible for business integration services at Comdisco, Inc. in Rosemont, Ill. Walker's role is to evaluate, select and implement new products and applications within Comdisco and between Comdisco and its customers. In December, she will graduate from the Executive Masters Program at the Kellogg School at Northwestern University.

"If I have a technical expert who says, 'This is great, we ought to use it,' I ask questions that will be asked of me by the business committee: Will this solve a business need, and are there other technologies available that do the same thing?"

Sid Diamond has 28 years of experience in IS, most recently as vice president of worldwide information services at Black & Decker, which he left earlier this year. Diamond has also held senior IS posts at Bristol-Myers Purolator Courier, Continental Can and Merck & Co. He is vice chairman of the Conference Board Information Technology Council and the Computer Executive Roundtable, and he is the founder and chairman of the Financial Systems Roundtable. He holds an MBA from Pennsylvania State University.

"Who do you put your bets on, partner with, to take you through to the year 2000? The picture is muddied because hardware has become a commodity and because of the workstation and LAN phenomenon."

CW: Has your IS group or firm become more receptive to experimenting with revolutionary products or approaches? If so, why?

Walker: Absolutely. It's become much more focused on business issues and how technology can support them. You can't afford to have long lead times on development of applications, such as GUIs and relational databases.

Dell: Without a doubt, yes. Once you teach [the organization] what computers can do and they see operational improvements, it's easier to sell them on the next product.

Diamond: I think this is due to the ever-increasing pressure on business. Two important drivers here are continuous improvement, or total quality management, and business re-engineering, which involves wiping the slate clean and dramatically changing the way of doing business.

CW: How well do your vendors communicate their vision for advanced products?

Diamond: Fair to poor. Most are concerned with the "here and now" of their products rather than upcoming products or, more importantly, giving a vision or an architecture.

Dell: I give them a fair rating. We recently did a five-year strategic plan, and I did not find as much as I would hope from vendors in helping customers develop this. On their individual products, vendors have a vision. But it's up to people like myself to take all this, look at the needs of the institution and make an enterprise plan.

Walker: We may have a unique relationship with vendors because we're an independent lessor. Our customers come to us for technology solutions, and Comdisco's vendors know this. Comdisco sits on some strategic planning and product development committees.

CW: Looking out to the year 2000, what three technologies will have the greatest impact on your industry or on society in general?

Dell: Optical disc in health care is going to be very big. It'll change dramatically the way we do business. The amount of paper and images processed in health care organizations is phenomenal.

Wireless is the other thing. My perception is that it will make a major difference in the way health care is delivered. Also voice/data/image integration. We do voice-to-text today, we do imaging, and we do data. Integration of all that is one of my major challenges.

Walker: Being able to integrate images, voice, data and facsimile.... That's an area where we'll see tremendous growth. Ultimately, we'll be a paperless society, and a lot of that falls under telecommunications.

[There are also] rule-based systems. If you can identify all the rules for a decision, you can automate it. And you can do much of that with object orientation. We're developing a rule-based system to handle the bulk of our lease generation. It'll handle maybe 70% automatically. The remaining 30%, the complex transactions, will be routed to the correct individual. But some rules are so complex, automation isn't worth it. There will always be a reason for an individual to come in and make a judgment call.

Diamond: The workstation put vast amounts of power on the user's desk. Now that is being linked to client servers. But a third piece is the concept of distributed databases. I'm looking forward to a seamless user environment with no walls in terms of platforms or applications.

John J. Dell is vice president of hospital information systems at St. Clair Hospital in Pittsburgh. Dell's hospital IS background also includes four years as a manager at Price Waterhouse and two years as a senior consultant at Arthur Andersen & Co. Dell holds a B.S. in computer science from Point Park College in Pittsburgh.

"On their individual products, vendors have a vision. But it's up to people like myself to take all this, look at the needs of the institution and make an enterprise plan out of it."

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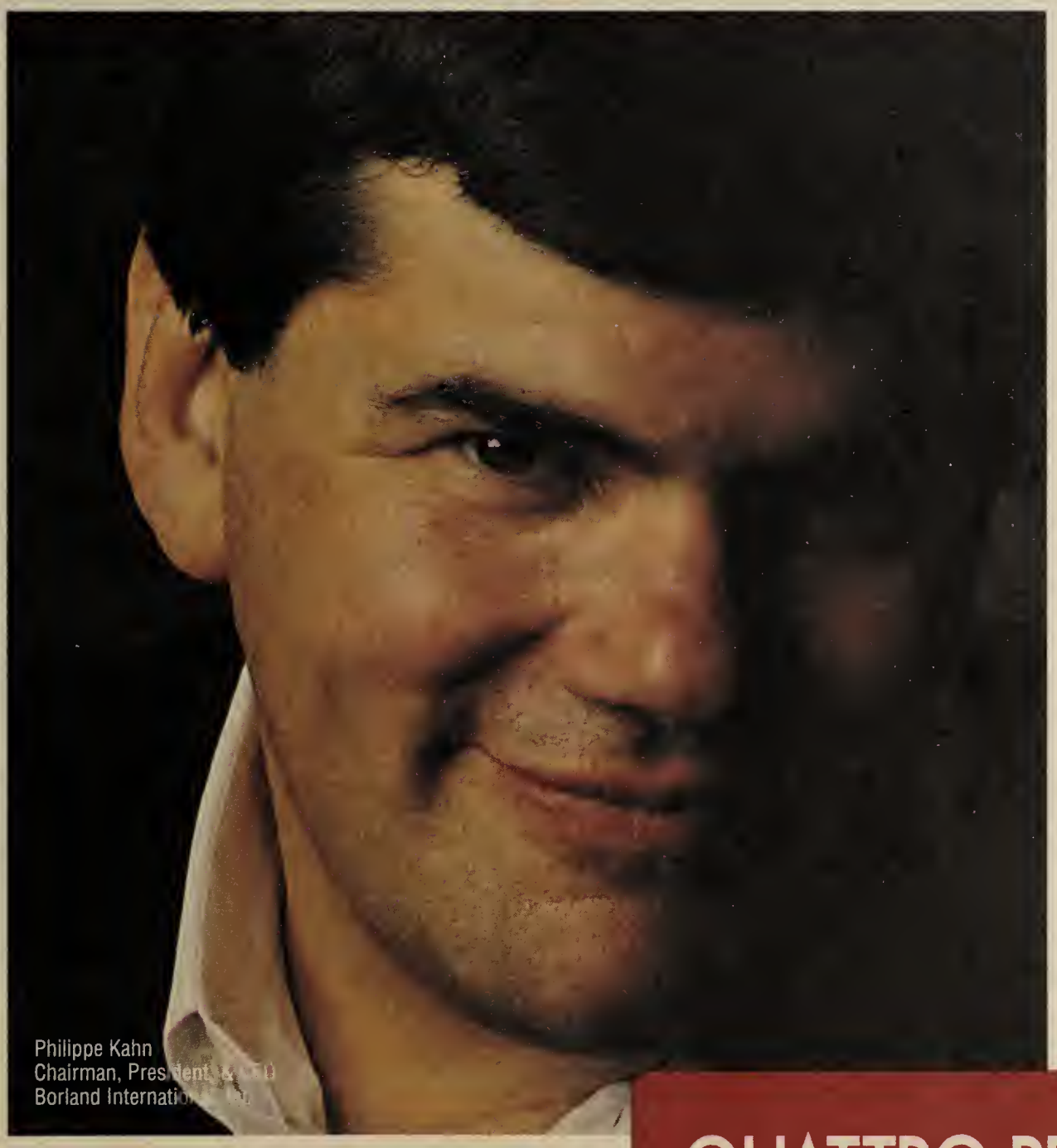

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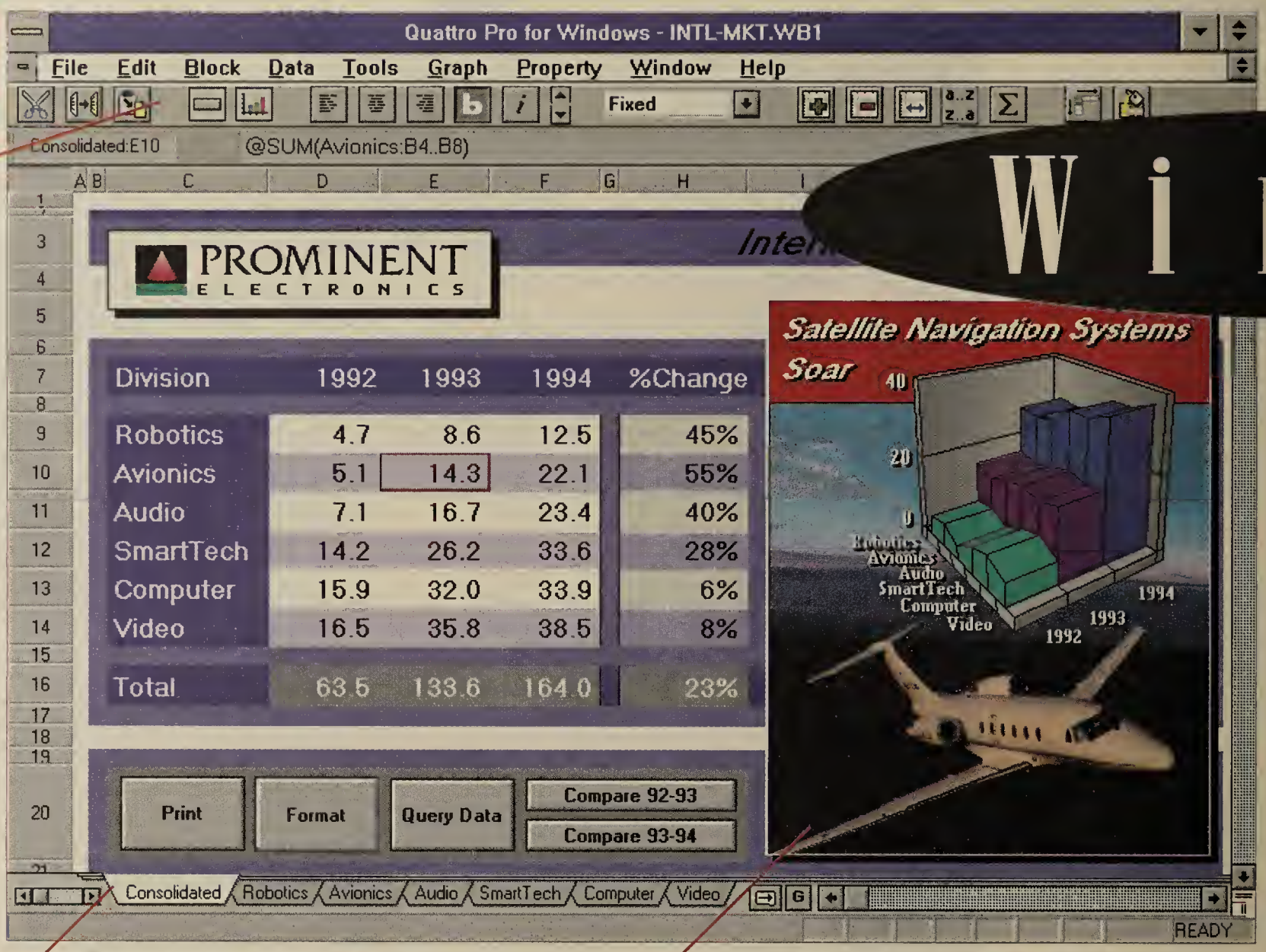

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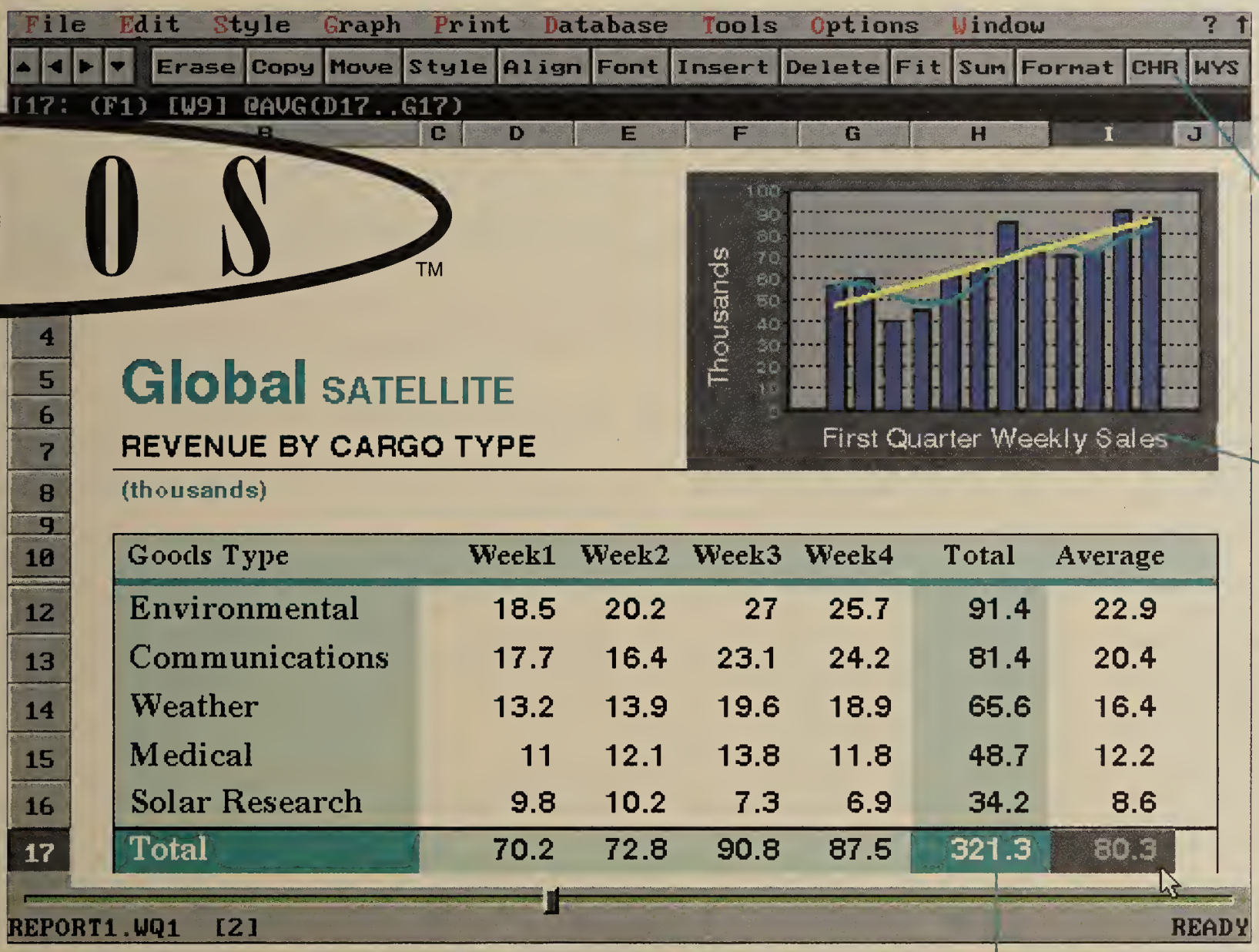

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Out of work? Keep that chin up

ROBERT HARGROVE

It may have happened to you. You get to work early and notice that you cannot log on. Then three guys with clipboards appear and ask if you've "got a minute?"

The litany is frequently the same: ". . . economic hard times . . . reduction in staff . . . nothing personal, just a numbers thing." You may be thinking, "Gee, maybe you guys wouldn't mind chipping in on my house note. After all, it's just a numbers thing." But that's it. You, perhaps with a number of other fellow employees, have just been laid off.

So what do you do now?

Contrary to popular belief, it's best just to go ahead and panic. You've got to do it sometime, so give yourself 15 minutes of good panic and get it out of your system. Just don't act on it. Don't buy five crates of peaches or nine pizzas just because you've got the coupons.

Timothy Carroll

It only gets better

Realize, too, that the scariest day is often the first day of unemployment. That's the time that you expect to see your name in the newspaper with the headline, "Computer professional laid off. Also made 'D' in art in third grade. Losing ways continue."

Also, don't dwell on it. Don't try to figure out why you got laid off when Fred "I've-Never-Written-a-Program-That-Works-But-That's-OK-Because-Someone-Always-Fixes-It" McGurk is still slinging code.

There are, however, some things you can do.

In the mornings, get up, shower and get dressed. This is not as simple as you may think. There is a tendency to sleep in to enjoy your newfound "freedom." But trudging around the house in your flannel robe yelling, "You tell 'em, Oprah," at the TV screen is not a rung up on the old career ladder.

Avoid bonding with your couch. It's easy to do, since that's where the remote control is, but getting up will help you avoid the rumored fate of a laid-off computer professional in Michigan who supposedly became grafted to his Barcalounger.

Hold on to your head

Then there is the headhunter experience. These are the people who take the flotsam and jetsam of human experience (this is now you), dress them in dark suits and recycle them back into the employment stream.

Sometimes these recruiters do not have a particularly heavy technical background, so you may get questions like, "Do you know Cobalt?" You can say that it is not your favorite heavy metal or simply correct the recruiter and continue.

You may want to reacquaint yourself with those professional organizations you've been zealously avoiding for years. Forget the fact that the speaker's overheads were unreadable or that the cuisine was less than four-star ("Is meat supposed to be blue?").

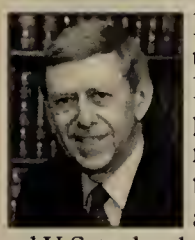
Above all, relearn job-seeking skills. Learning to interview again, or maybe for the first time, and preparing an effective resume are handy skills to have in any economic climate.

Don't despair. Being laid off is like a splinter in the toe, always painful but rarely fatal (unless untreated). It has also happened to more people than you may think.

Hargrove was laid off in September 1991 from a job he held for 10 years. Five months later, he landed a new job in a different industry.

'Demand pull' policy would top 'supply push'

JOHN DIEBOLD



In his recent column, Richard Kraft correctly pointed out some negative conditions that have adversely affected U.S. technology during recent years [CW, Sept. 14]. Kraft indicated both the difficulty and importance of undoing the damage.

I suggest an approach to what is often called "industrial policy" or "technology policy" that might move us in a positive direction.

Most industrial policy proposals are based on a "supply push" concept — direct or indirect monetary subsidies for targeted, potential growth industries, tax advantages and provision of seed money in various forms.

While tax conditions that encourage research and development and new investment are desirable, many supply push efforts have in the past led to pork barreling and frustration.

The alternative that I suggest is to establish "demand pull" in markets such as societal infrastructure.

Old-fashioned notion

Both political parties agree on the need for major expenditure to renew our infrastructure. Most of the time, however, renewal of infrastructure is viewed as a matter of refurbishing systems conceived in the late 19th or early 20th century.

This status-perpetuating approach is totally inadequate for an advanced industrial society. A more forward-looking approach is required — one that will use available technologies to satisfy the needs of the early 21st century.

Such an approach will bring two important benefits:

- A "demand-pull" for advanced technologies, systems and software that will ensure vigor in those sectors of the economy far more directly and effectively than military or space program "spin-offs" or supplier subsidies.
- Improved productivity and effectiveness of the infrastructure, which will lead to increases in business productivity and ultimately improved international competitiveness for the nations or regions pursuing such an approach.

Both "soft" and "hard" 21st century infrastructure will be changed materially by information technology. The delivery of health care and education are what I term "soft" infrastructure; and intelligent vehicle/highway systems and area communication grids are what I characterize as "hard" infrastructure.

The monitoring and response to environmental changes is, for example, one major new societal infrastructure that will be based almost entirely on information technology.

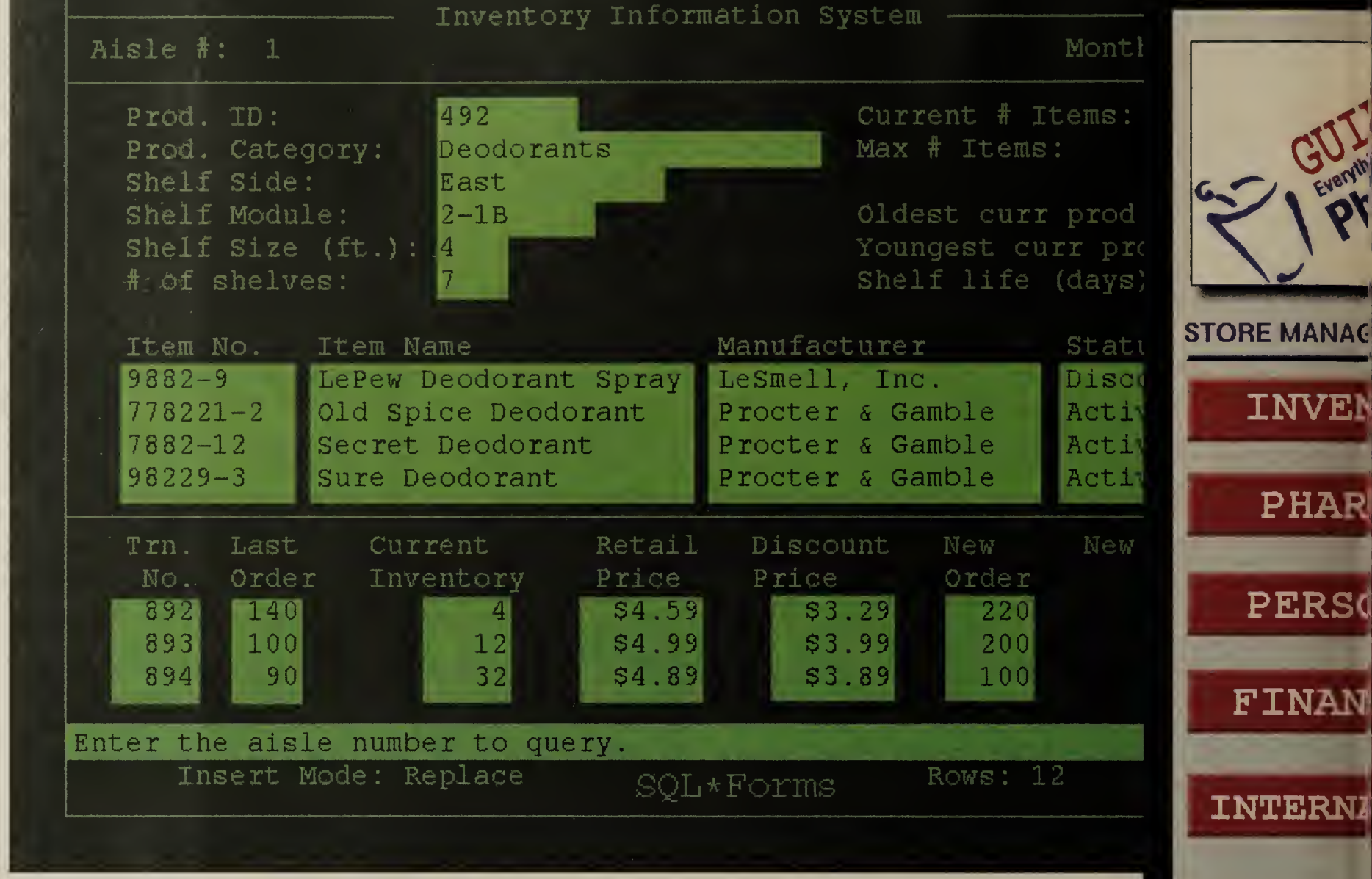
> RENEWING OUR infrastructures to satisfy the needs of the 21st century and applying the available technologies will bring important benefits.

A new approach

I recommend that we build fresh thinking into the legislative process on these subjects. And when that is done, each time money is appropriated for a new project, an appropriate functional requirement should be built into the legislation. This is an alternative approach to the kind of stimulus that defense and space provided in the past.

Using the suggested market approach, we will effectively create a domestic market for technologies that compete in world markets. The great advantage I see is that this will stimulate companies to develop systems that will have growing, worldwide peacetime markets. And in doing so, rather than having to guess where to put public money, private capital is put at risk.

Diebold is chairman of Diebold Institute for Public Policy Studies, Inc., an operating foundation.



Screens exhibiting similar data show the difference between traditional applications (above) and real world applications developed using Sybase's Gain (right).

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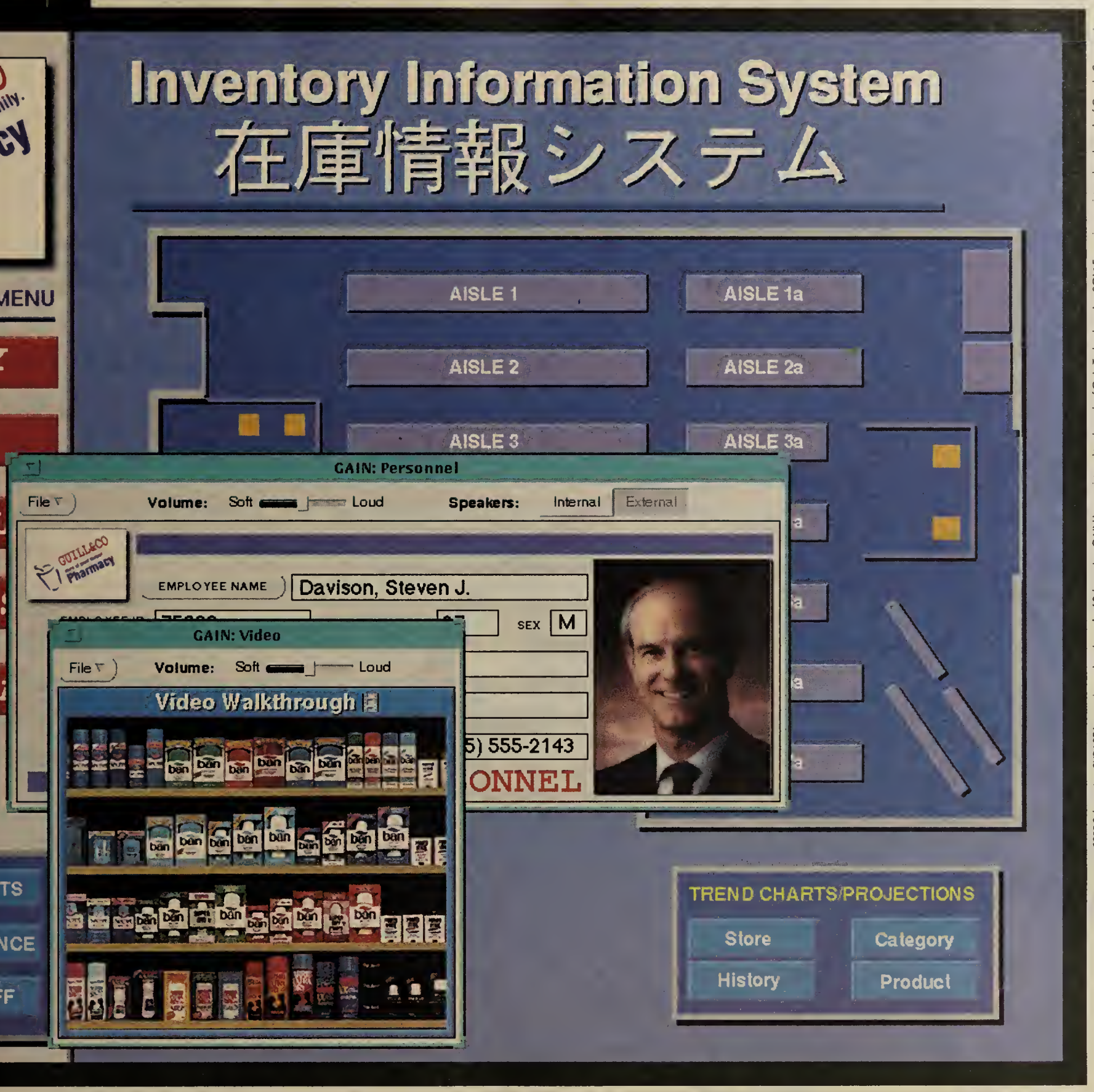

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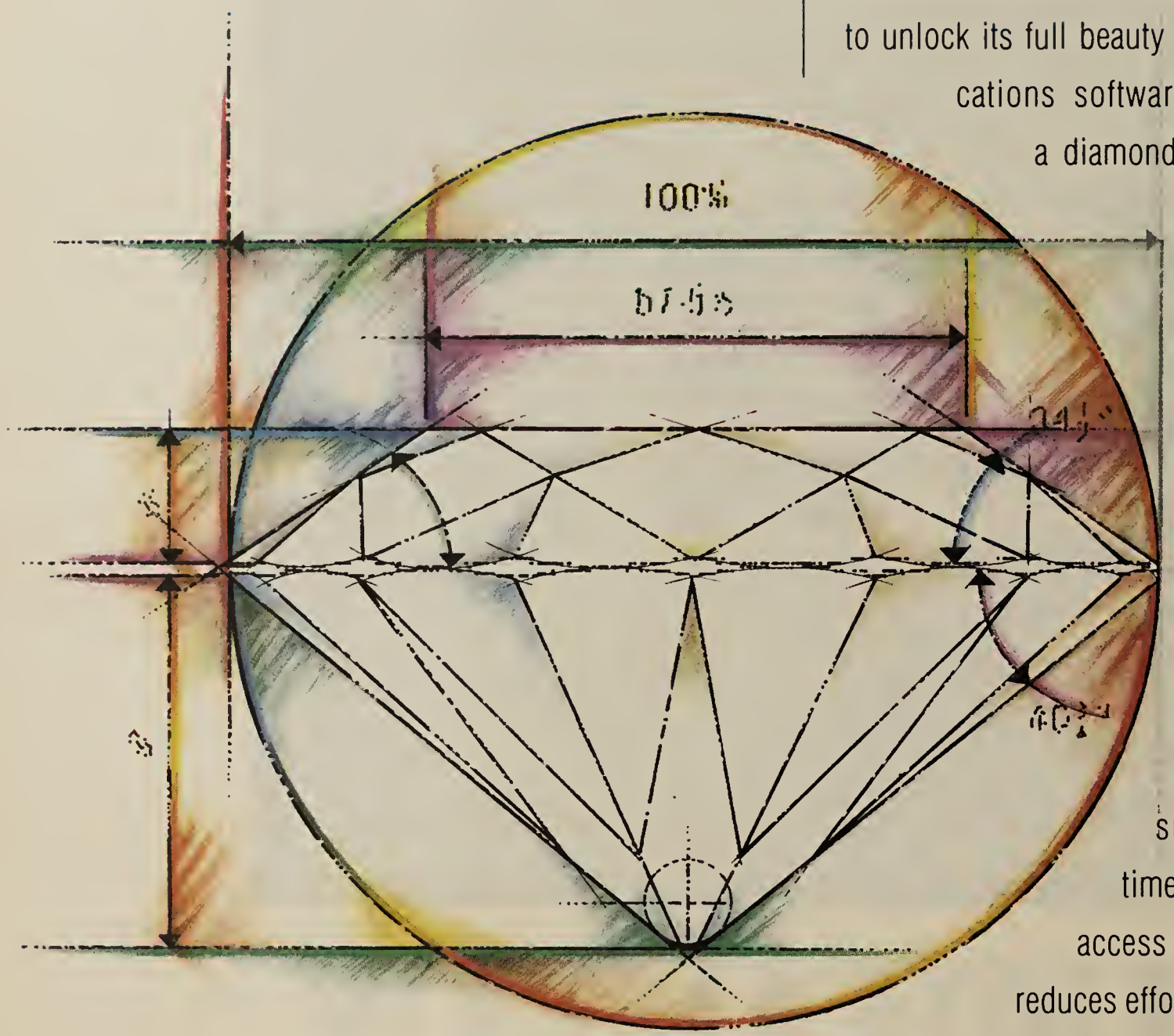

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COMMENTARY

Jesse Berst

Use caution on Windows NT

The recent announcement that Windows New Technology (NT) will be delayed is the perfect excuse to re-examine this new operating system and its impact on corporate IS.

For companies interested in testing out brand-new technology, think about installing NT code now. However, many companies will want to wait until NT is a shipping — and proven — product.

NT, as you will recall, is Microsoft's new operating system. It is designed to be "portable" — that is, to be movable to different hardware platforms — while remaining backward-compatible with DOS and Windows/DOS. If Microsoft can pull it off, corporate IS will have a seamless, scalable solution. They'll be able to move their 16-bit Windows/DOS applications onto high-end workstations running Windows NT. And they'll be able to take advantage of powerful 32-bit NT applications as they appear.

After promising that NT would be out by the end of the year, Microsoft has now changed its tune. The current target is spring 1993. My sources tell me that NT may slip even further, thanks in part to problems with achieving DOS compatibility. NT attempts to emulate DOS in software, a difficult task made even more challenging by the thousands of "nonstandard" DOS applications that have sprung up over the years.

There is a real danger to IS in these "creeping delays." You could be tempted to put off a strategic decision for a few more months until NT is out. As we've just seen, when those few months pass, NT could be delayed a few months more. It could turn out to be the computer equivalent of a carrot on a stick, with you playing the role of the donkey.

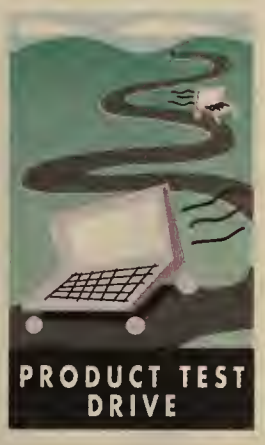
That's not to say that all IS departments should steer clear of Windows NT. During the past 10 years, we've seen more and more companies gain a competitive advantage through the application of PC technology. If your firm needs to live on the cutting edge to stay ahead, then NT should be part of your game plan.

Continued on page 40

Quattro Pro for Windows boosts usability

BY CHRISTOPHER LINDQUIST
CW STAFF

Spreadsheets and calculators have a lot in common. When they came out, users paid hundreds of dollars to get very limited functionality. But the productivity improvements per feature on a four-function calculator, or Lotus' 1-2-3 1.0, were tremendous.



Then calculators began getting more complex, but the new features appealed only to niche markets. The same has happened to spreadsheets. As they mature, the spreadsheets have few new functions that offer broad appeal.

Borland International, Inc. said it has recognized this trend and that its recently released Quattro Pro for Windows is aimed at increasing usability, not functionality. Borland has succeeded, though apparently at some cost.

Slight inconvenience

Quattro Pro for Windows uses a lot of system resources, nearly twice as much as Microsoft Corp.'s Excel, according to a resource monitor. While this would not be a problem for many users, who run only one or two applications at a time, it did cause me to close some applications in order to get Quattro Pro for Windows to load.

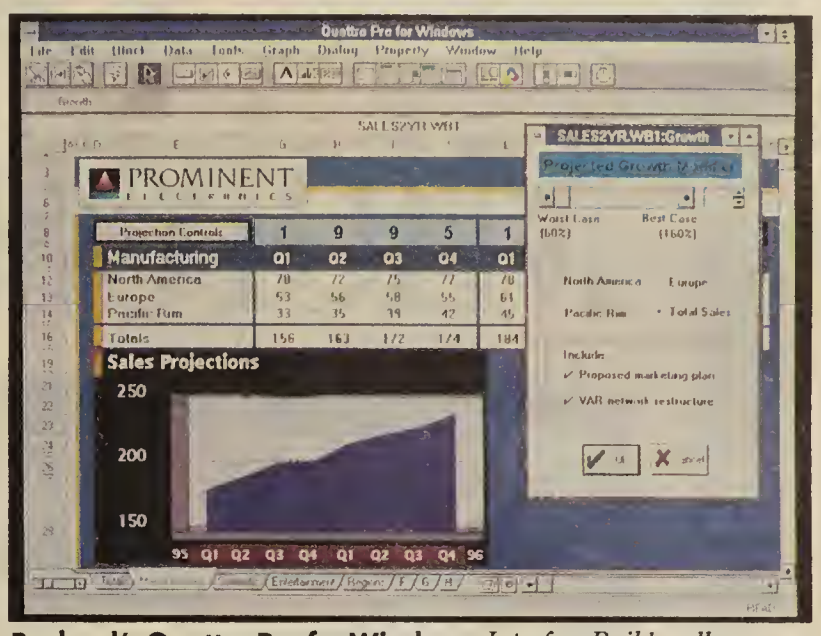
My goal in testing Quattro Pro for Windows was not to set up a feature-by-feature comparison with Microsoft's Excel or Lotus Development Corp.'s 1-2-3 for Windows. Borland itself has acknowledged that there are analysis functions, features and speed comparisons in which it loses.

My intent was to load the product and dive in blind to really test the "usability" that Borland claims to provide.

A truly usable spreadsheet, in my mind, should be one where I do not have to read the documentation to use most of the features. Under those terms, Quattro Pro for Windows is a very usable spreadsheet.

I set out to build a budget spreadsheet from scratch. Sheets are presented as notebook pages with tabs that you can click on to move from page to page. Tabs can be renamed simply by clicking with the right mouse button to call up the "object inspector" menu.

In fact, you can click the mouse's right button to display an object-specific list of variables that can be modified for nearly any object in a spreadsheet. Whether Microsoft or Borland thought of this feature first depends on who you believe, but regardless, it works well.



Borland's Quattro Pro for Windows *Interface Builder allows users to create custom interfaces to spreadsheets*

Two files

I renamed tabs "Home" and "Work" to keep separate sheets for each set of information. There is always a "Graphs" tab at the end of the notebook where all the graphs are stored.

I created the Home sheet using the SpeedFill command to insert dates and data and then SpeedFormatted it with one of Borland's preset formats, which determine color, shading and fonts for a selected range. Not once did I have to go to the Help command.

To help the novice user, all the SpeedBar icons and menu items have a short description that appears in the lower left-hand corner as you move the mouse pointer.

I then did the same for the Work page. Finally, I created a Consolidation page to keep all my totals. Everything was point and click.

The pages went together easily and looked quite presentable,

Continued on page 40

System takes doctors' orders and heals itself

BY JAMES DALY
CW STAFF

TORONTO — There are few things worse than lodging a complaint with an organization and then watching it sink out of sight into the muck of bureaucracy. That is even harder to stomach when the complaint is being made against a professional as supposedly impeccable as a medical doctor.

But bureaucracy and an antiquated complaint handling system was exactly what was ailing The College of Physicians and Surgeons of Ontario (CPSO), a 25,000-member self-regulating professional association similar to a U.S. state medical board.

Although CPSO's primary duty is to grant physician and surgeon licenses, it also has another less tasteful duty. When someone believes a CPSO member has performed unprofessionally, he lodges a complaint with the CPSO's Public Complaints and Investigations Department, which is responsible for investigating and — if prosecution is warranted — judging the case.

Typically, the CPSO has a current caseload of roughly 2,000 public complaints, plus about 100 other investigations. But in the past few years, the number of complaints lodged with the CPSO has skyrocketed. For example, between 1991 and 1992 the number of sexual harassment complaints increased 275%.

Unfortunately, the CPSO was just not getting the job done. Investigations were limited to slowly collecting written documents; progress reports were out of the question. The result was that a 1991 survey by a CPSO task force revealed widespread public dissatisfaction, an irony not lost on the staff members whose central goal was to serve the public.

"Something would eventually get done, but it could typically take years," said Keith Thomas, the CPSO's director of information services. "What was worse was that from the time the complaint was lodged until something was decided, the person who filed the complaint heard nothing."

CPSO officials rolled up their sleeves and got to work. At the end of the road, they brought out an application called Case Administration Tracking System, or CATS. The Microsoft Corp. Windows-based system uses Software Publishing Corp.'s Superbase with SQL Library to continually track the status of an investigation, the documents supporting each step and the names of all the individuals involved in the case.

The development process started with outlining goals. First, to institute a more timely investigative process, the staffers needed to create a system that would allow them to do more work on the telephone. While on the phone, they would need to quickly and easily find and record

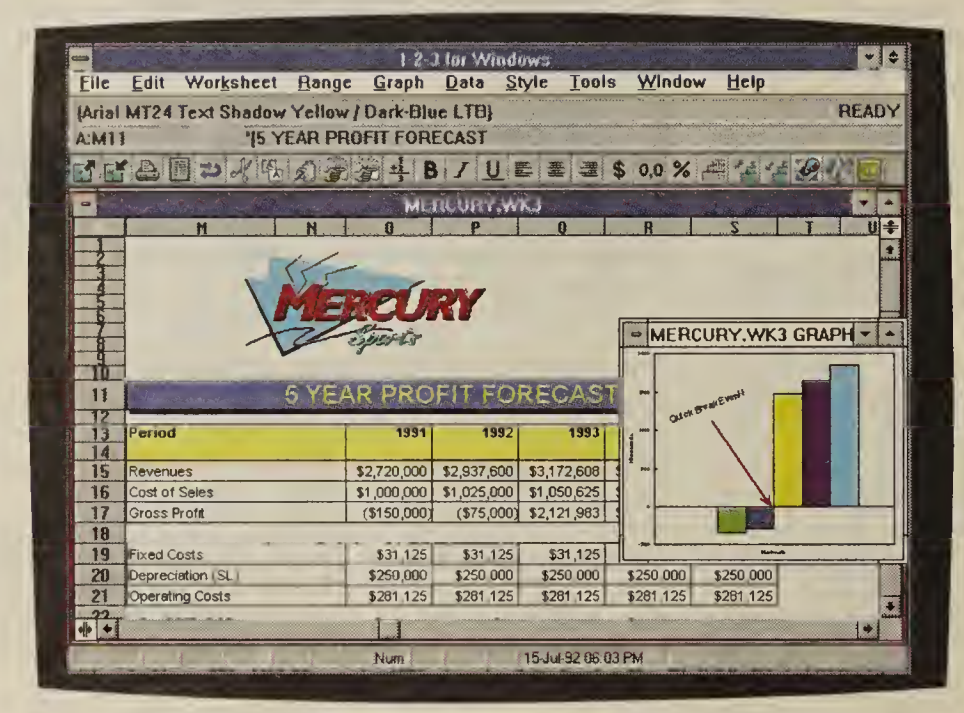
Continued on page 41

ON SITE

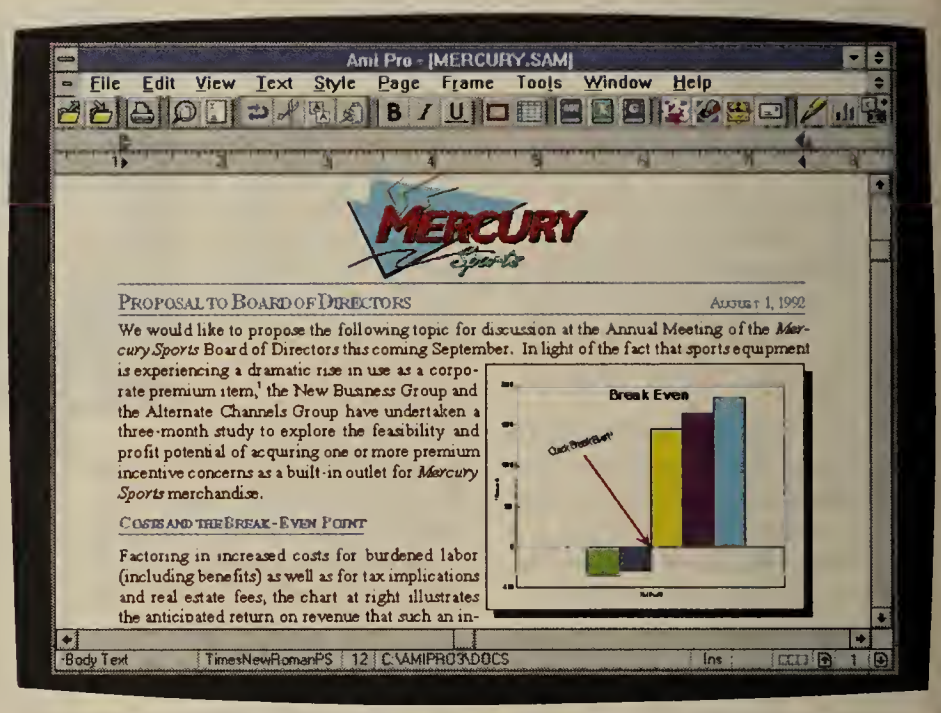
College of Physicians and Surgeons of Ontario, Canada (CPSO)

- **Challenge:** To handle growing caseload of complaints against CPSO members and public dissatisfaction with slow paper-based investigative process, without increasing support staff.
- **Strategy:** Complaint department automated with Software Publishing's Superbase. Tracking system allows CPSO's 24 investigators to closely follow each step in a case and insert images of relevant documents.
- **Results:** The dissemination of summaries and global index of names brings out more information earlier in a case's progress, resulting in quicker resolution.

Compared to Lo
Microsoft Office look



1-2-3 for Windows Release 1.1, the ideal choice for 1-2-3 for DOS users moving to Windows, now includes SmartPak, a disk which includes over 25 new features and usability enhancements.



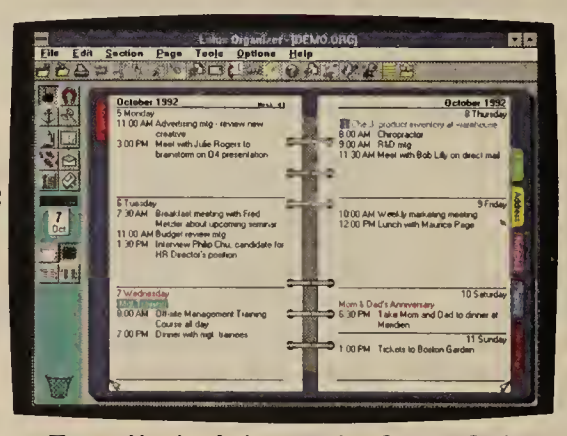
The new Ami Pro 3.0 has been hailed as the best word processor for Windows, with new features that make it more powerful and easier to learn and use than Microsoft Word for Windows.

It's true. When you evaluate our complete solution for Windows™ desktops and then look at theirs, you'll see why ours is a better business choice.

Of course, both SmartSuite™ and Microsoft® Office include full-featured products. But SmartSuite has been recently updated to include 1-2-3® Release 1.1 with SmartPak™ and the newly released Ami Pro® 3.0, as well as Freelance Graphics® and cc:Mail.™

All four of these award-winning products share a common interface as well as our innovative SmartIcons.™ So when you've learned one, you've learned them all.

What's more, SmartSuite delivers some truly unique integration capabilities that aren't possible with Office. All four SmartSuite products, for example, share data, text and graphs between each application smoothly and seamlessly. So when an outline produced in Ami Pro is imported to Freelance Graphics, it's automatically converted into a Freelance Graphics outline and full-slide presentation. And a 1-2-3 graph exported to Freelance Graphics will arrive, fully editable. You can even move quickly between



For a limited time only, SmartSuite also includes Lotus Organizer, the computerized way to keep tabs on all your daily tasks.

*Offer expires 12/31/92 or while supplies last. **Suggested retail value. ***In Canada, call **1-800-GO-LOTUS.** When you purchase 10 SmartSuite packages, you'll get a free cc:Mail for Windows Platform Pack (a $495 val
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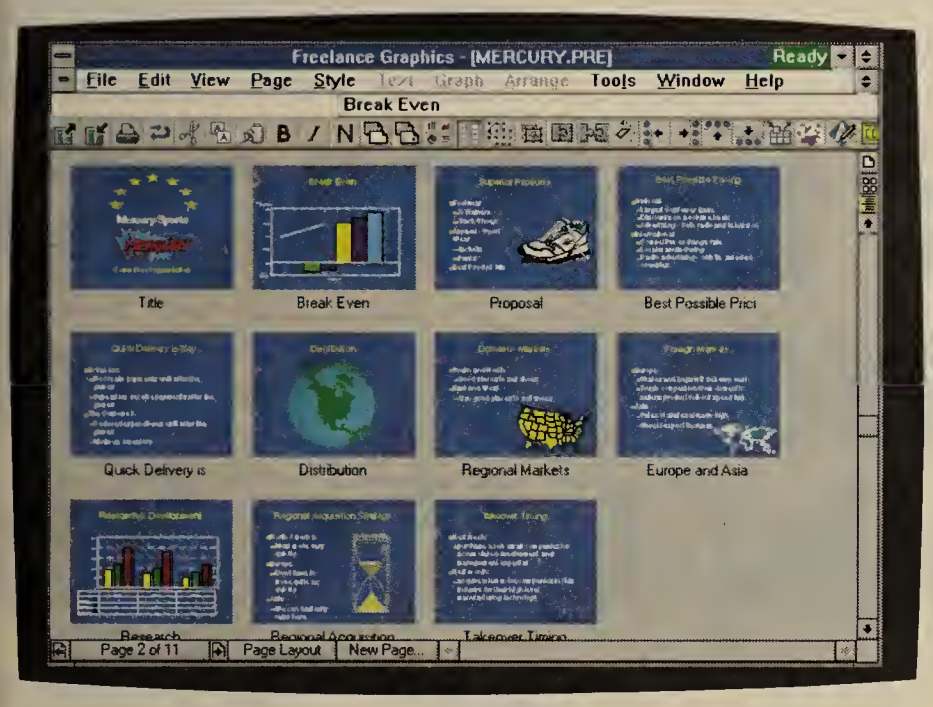
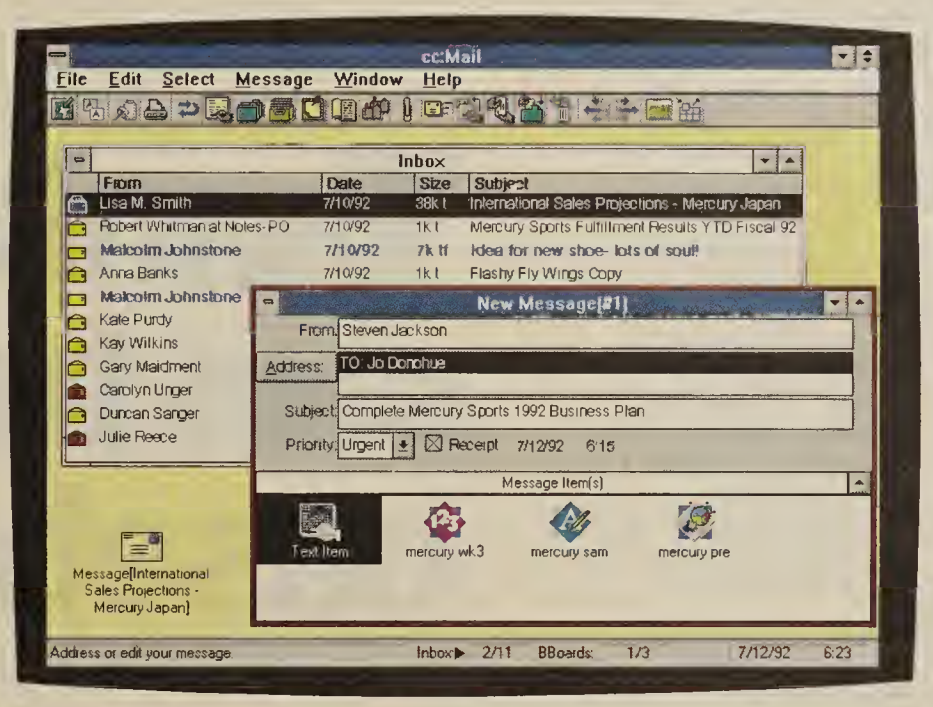
s more like a cubicle.



Award-winning Freelance Graphics is the easiest, fastest way to create a stunning presentation. It includes QuickStart, an on-line tutorial, and SmartMasters™ which automatically manage the design of your presentation for you.



cc:Mail is the world's leading LAN-based e-mail system that allows you to send text, files, graphics and faxes across all major networks and computing platforms without the need for new hardware.

SmartSuite applications just by clicking the icon of the application you want to open.

Better still, all SmartSuite applications are mail-enabled. So you can use cc:Mail to send "live" documents from within each application. Office, on the other hand, requires you to install and use an optional macro with Microsoft Mail 3.0.

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Lotus SmartSuite for Windows

1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

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Berst

CONTINUED FROM PAGE 37

This is especially true because Microsoft has an active and well-administered NT beta-test program. Beta-test users get lots of help and lots of information. NT also deserves consideration because of its technical strengths. On paper, NT looks to be the robust operating system IS needs to build line-of-business applications.

There will be plenty of time to move to NT when it gets here officially. Microsoft has been talking as if a substantial portion of the market will move to NT the day after it arrives. That's nonsense, no matter how good NT turns out to be. People don't migrate to a new operating system on the spur of the moment. The changeover will occur gradually, starting with servers. Only after a body of NT-specific software appears will people begin to move their desktops to NT. That probably won't occur until at least a year after NT ships.

What should you do in the meantime? Systems integrators or consultants would tell you to opt for "proven solutions." Today, that usually means Windows/DOS for the desktop and Unix, OS/2 or Novell's NetWare for the server.

I continue to believe that NT will ultimately be a powerful and strategically important operating system. I continue to think you should be testing NT if your company purposely pushes the envelope.

The rest of you should take the safe route and wait until NT proves itself before you make it part of your plans.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.

Quattro Pro for Windows

CONTINUED FROM PAGE 37

including a three-dimensional graph. Discontinuous joins, SpeedFills and SpeedFormats were all very straightforward.

I then went into some of the more interesting features of Quattro Pro for Windows, including the Interface Builder and the Database Desktop.

The Database Desktop reportedly takes advantage of the Local Interbase Engine to ensure data integrity and multiuser concurrency. That may be true, but I was more interested in taking a look at the .DBF files that contain my vendor information.

Database Desktop currently allows access only to dBase and Paradox file formats. That puts it at a disadvantage to Excel, which uses Pioneer Software's Q+E, which supports several formats, including SQL Server. However, Q+E is a separate package from Excel and lacks the integrated, all-in-one feel that Borland has achieved with the database desktop.

Custom interfaces

The Interface Builder is just what it says: a tool that allows you to create custom user interfaces to spreadsheets.

Borland has included some highly advanced examples, but I simply wanted to see how quickly I could create a dialog box with a spin control that would allow me to directly connect to data in a table and a graph. It took five minutes and no manuals. Any average spreadsheet user could do the same.

This is not to say there are not some negatives to Quattro Pro for Windows. Borland has acknowledged that it does not contain the statistical muscle of Excel. Its database access is currently limited to Paradox and dBase, and while it is easier to use than Excel, that is enough to make an experienced Excel user want to switch.

Borland is betting the farm on the "usability" theory. And while it may have the most usable spreadsheet on the market at the moment, it remains to be seen if users are willing to pay for that abstract quality.

Computer virus products debut

BEAVERTON, Ore. — Central Point Software, Inc. moved to help users fighting computer viruses by introducing the following antivirus products:

- Central Point Anti-Virus (CPAV) for Novell, Inc.'s NetWare, a $1,195 package that centralizes the administration and reporting of virus activities while affording virus protection for both servers and desktop personal computers.
- CPAV Version 1.4 for DOS, which combats viruses developed by the virus Creation Laboratory and more than 1,300 other PC viruses. It costs $129.
- CPAV for Apple Computer, Inc.'s Macintosh, a $69.95 package identical to the virus detection and eradication program found in MacTools 2.0.
- CPAV Scan-Only System, a utility that scans DOS files to determine if they are infected and alerts users if a virus is found. It is free through the firm's bulletin board.

The company also announced CentralTalk and CentralAlert, which have been incorporated into the NetWare and DOS antivirus packages. Both streamline the process of virus monitoring and alert.

In addition, Central Point announced an expansion of its Virus Protection Services Plan. It features a quick-response virus eradication team that is poised for dispatch within 24 hours of a virus attack at any subscribing site in the U.S.

JAMES DALY

RAM Mobile D

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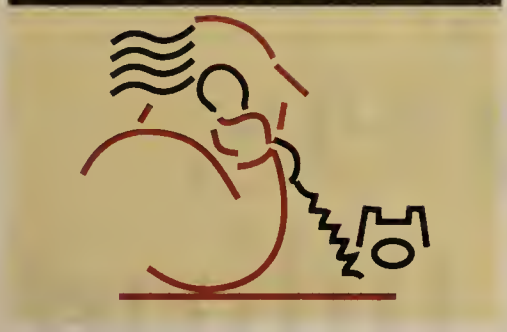
HELP LINE

IBM OS/2



Part of a continuing series of tips from personal computer software vendors, based on questions commonly asked of customer support personnel. This week's questions focus on IBM's OS/2 2.0.

Q I accidentally shredded some objects that I want back, such as my drive object. Can I get these back?

A Yes. When you turn on your computer, it goes through a self-test. It usually beeps after this. Immediately after this beep, or right after you hit the ENTER key on a multiboot system, press and hold the ALT and F1 keys together until you hear rapid beeping. This means you have filled the keyboard buffer.

You should soon see a message that your INI file and CONFIG. SYS files have been replaced from the INSTALL directory. This will cause the system to build you a default desktop just like the one you had when it was first installed.

Q How can I stop the programs that were running when I shut down from starting when I reboot my system?

A When booting your system, watch for the Workplace Shell screen to paint the background for the first time. Watch carefully and you will see the desktop folder animation "explode" open.

As soon as you see this, press and hold the CTRL, ALT and F1 keys together until you see the Workplace objects and icons display. Then release the keys.

Q When running a DOS program in a VDM, I get the message, "Incorrect DOS Version." What can I do?

A Open the settings notebook for the object on the desktop. On the "Session" page, open the DOS settings and change the DOS_VERSION. This will allow OS/2 to make the application think it is running whatever DOS version you need.

Q I formatted a drive for FAT, but I want to make it HPFS. Can I do this?

A Yes. First, ensure you have backed up all of your data from the drive. Now, let's assume it is your E drive you want to format. Simply type:

FORMAT E: /FS:HPFS

Likewise, if you want to make an HPFS drive FAT, use /FS:FAT in the line above.

ata and Conrail

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boxcars of broccoli,
d and bulbs.

Using pen-based computers and RAM's wireless data networks, Conrail's yard locomotives will be able to send and receive pick-up and delivery information, as well as other messages, from its national customer service center. What used to take hours to communicate will now take a matter of seconds.

Conrail isn't alone. MIS/DP departments in countless other companies are finding out that with RAM, deploying remote technology in the field is a reality today. Many applications that were previously desk-bound, such as E-mail, order entry and database access, can now be performed anywhere your people go.

RAM's wireless data service is based on Mobitex,® a proven technology and open international standard for wireless data communications. Other network features include: packet-switching which eliminates circuit set-up time inherent in other wireless technologies; and transparent roaming and store-and-forward capabilities so users can stay in touch with their applications wherever they go.

Today RAM is expanding and operating a series of wireless data networks to cover the top 100 metropolitan areas of the United States and the major transportation corridors — providing coverage to more than 90 percent of the U.S. urban business population. To learn more about RAM's service, call 1-800-736-9666. RAM Mobile Data, One Rockefeller Plaza, Suite 1600, New York, NY 10020.

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RAM MOBILE DATA

System takes doctors' orders and heals itself

CONTINUED FROM PAGE 37

case information. They would also need to give those who filed complaints timely updates.

They also needed a system that would save them from drowning in a sea of paper. Every CPSO case involves from five to 60 administrative steps, each requiring a summary, Thomas said.

Additionally, every case has its own supporting documentation — sometimes hundreds of documents.

IS staff members also had to work with two dozen gun-shy investigators because there was almost no automation involved in the investigative process up to that point.

"It was clear that the system had to be truly easy to use — not only easy to operate but easy to learn," systems specialist David Ikeda said.

For each investigative step, CATS inserts images of the relevant documents and attaches the text summary. Its global index provides a quick and easy look-up without the user having to know with which case the name is associated. It also retains all names and headers up to six years after case closure.

Reminders given

CATS' date and event-driven signal system also alerts support staff when action is required on a case, such as distributing summary reports. Security is based on the user's name, to which CATS assigns access privileges.

Upon logging onto CATS, users need only point and click on the graphical interface to perform searches, access records, attach documents, see action needed or print. Previously, the keyboard only entered or edited text.

Along with productivity and customer service benefits, the use of CATS running over a Novell, Inc. NetWare network provides an unexpected bonus: The dissemination of summaries and the global index of names releases more information earlier in the investigation, resulting in cases being resolved sooner.

Although CATS is still only in a production test, Thomas said it has received such positive reports that he expects the applications to be used through the investigative department early next year.

When you spend ten years designing spreadsheets, you get pretty good at filling in the rows and columns.

While this is old news to the nearly 18 million people who use 1-2-3,® it bears repeating: according to a recent ComputerWorld study for spreadsheets, Lotus® is still the company people prefer to do business with. And still the company that offers the best service and support—across all major platforms.

1-2-3 is the *only* spreadsheet that runs on all major platforms: Windows,™ DOS, Macintosh,® OS/2,® UNIX® and palmtops. Our DOS version of 1-2-3 is still the world leader and choice among 74% of DOS users.* For those of you moving from DOS to Windows, 1-2-3 is undeniably your best bet. And 1-2-3 for Macintosh continues to receive high marks from users for being the easiest spreadsheet to use.

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Lotus. Still on the top of the charts.

ComputerWorld Spreadsheet Brand Preference Study
First Place Winners 1992

POSITION	DOS	WINDOWS	MACINTOSH
FIRST PLACE Prefer To Do Business With	Lotus	Lotus	Lotus
FIRST PLACE Best Service/Support	Lotus	Lotus	Lotus

Lotus 1-2-3

*Based on Software Publishers Association share data, May 1992, for North America. **In Canada, call **1-800-GO-LOTUS** ***While supplies last. Demo disk not available for palmtop version of 1-2-3. ©1992 Lotus Development Corporation. All rights reserved Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Incorporated. OS/2 is a registered trademark of International Business Machines Corporation. UNIX is a trademark of UNIX Systems Laboratories, Inc.

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NEW PRODUCTS

Systems

ATI Technologies, Inc. has introduced two Microsoft Corp. Windows-based graphics accelerator cards.

The Graphics Ultra+ is a high-performance, dynamic random-access memory accelerator. Its features include enhanced image data transfer performance with memory aperture architecture and support for 1M or 2M bytes of video memory.

The Graphics Ultra Pro is a high-end, video RAM accelerator that features noninterlaced, 1,280- by 1,024-dot resolution with 256 colors and a 74 Hz refresh rate. It is available in Extended Industry Standard Architecture, XT/AT bus and Micro Channel versions.

Graphics Ultra+ costs $399; Graphics Ultra Pro costs $599.

ATI Technologies
3761 Victoria Park Ave.
Scarboro, Ontario
Canada M1W 3S2
(416) 756-0718

Utilities

Modular Software Systems has introduced Bootcon for DR DOS, a boot-time configuration utility.

Bootcon for DR DOS enables users to use any combination of graphical interfaces, devices and drivers without having to reconfigure their systems. Up to 26 different user-defined configurations can be selected during boot time. Users can predefine the different system configurations needed for various tasks by booting the machine and selecting the appropriate configuration from the Bootcon menu. The user reboots when the task changes and chooses a new configuration.

The product costs $89.

Modular Software Systems
Suite 208
25825 104th Ave.
Kent, Wash. 98031
(206) 631-5781

Software application packages

Software Publishing Corp. has introduced an updated version of Harvard Draw for Windows that incorporates Adobe Systems, Inc. Type Manager and support for TrueType and Type 1 fonts.

Harvard Draw combines speed, ease of use and a set of innovative drawing tools. It is the first drawing package that lets users draw in full-color Preview Mode. What-you-see-is-what-you-get text entry is also provided, as is an integrated autotrace tool. The product requires Microsoft Corp.'s Windows 3.0 or above and was designed for IBM personal computers and compatibles.

Harvard Draw Version 1.01 costs $595.

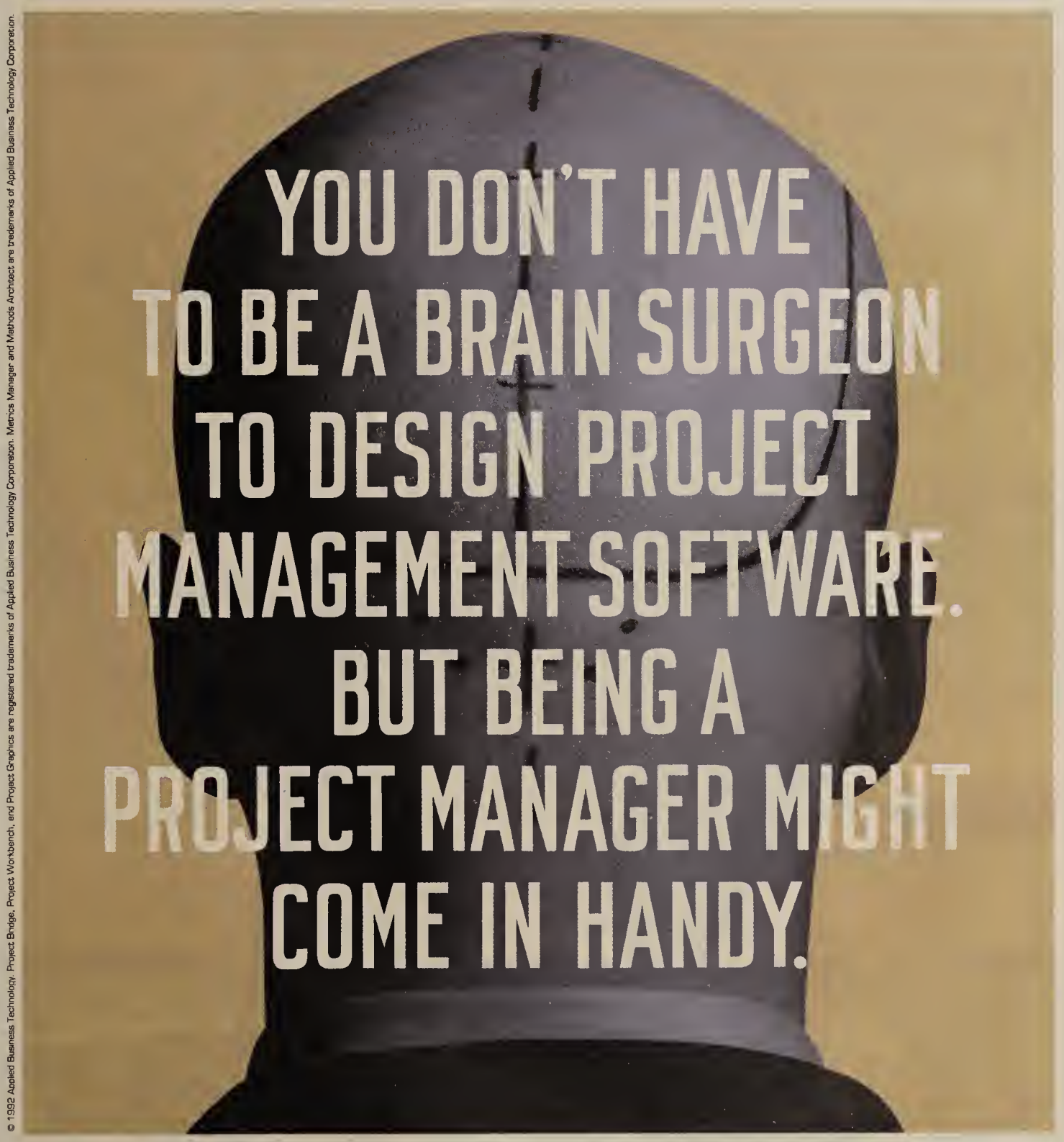
Software Publishing
3165 Kifer Road
Santa Clara, Calif. 95056
(408) 968-8000

Fifth Generation Systems, Inc. has introduced a software security bundle that combines Untouchable 1.1 antivirus software and DiskLock PC, an access restriction and encryption program.

Without requiring frequent virus signature updates, the product offers protection and detection of known and unknown viruses, including more than 1,000 known viruses, hard-to-detect "stealth" viruses and self-mutating viruses. A patented virus removal technique is included that gives 100% safe restoration of recoverable infected files. DiskLock PC locks out unauthorized users from data files and disks. The product also uses three encryption schemes.

The security bundle costs $99.

Fifth Generation Systems
10049 N. Reiger Road
Baton Rouge, La. 70809
(504) 291-7221



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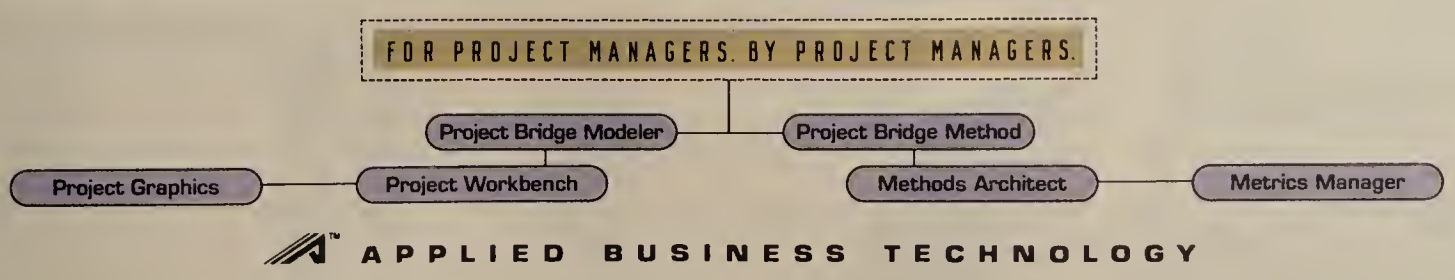

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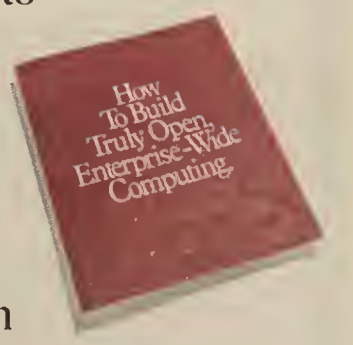

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Aftermath of reorganization: Sun sharpens market focus

ANALYSIS

BY MARYFRAN JOHNSON
CW STAFF

MOUNTAIN VIEW, Calif. — Although it was one of the most pivotal events in Sun Microsystems, Inc.'s 10-year history, the July 1991 reorganization into individual subsidiaries has gone largely unnoticed by Sun's user base.

That's precisely what Sun President and Chief Executive Officer Scott McNealy hoped would happen.

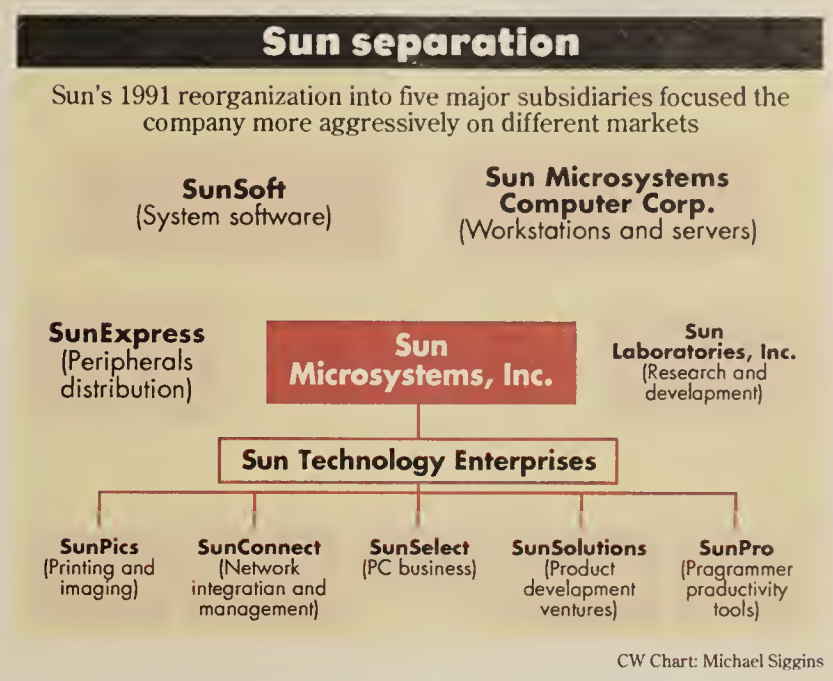
"We only want the customer to see one sales and distribution channel," McNealy said recently. That would be Sun Microsystems Computer Corp., the hardware company where the bulk of Sun's 12,500 employees still work. Some customers also deal directly with SunExpress, the subsidiary that sells workstation peripherals via mail order.

All in the family

The rest of the Sun companies do business mainly with one another and with OEMs, value-added resellers and other vendor partners.

"Our goal was to avoid having our customers lose the image of Sun as a single company," said Eric Schmidt, president of Sun Technology Enterprises, Inc., which has spawned more business units than any of the other major divisions (see chart). "It has made our decisions crisper, and our competitors are more clearly in focus now."

Analysts and users — at least, the few who noticed the change — tend to agree.



CW Chart: Michael Siggins

"Buying stuff from SunExpress is convenient, and I like a lot of the things they've done in terms of focusing on new product directions," said Mike Prince, information systems director at Burlington Coat Factory, Inc. in Lebanon, N.H. He said the individual divisions also seem to be paying closer attention "to products that are useful for their customers."

Some customers have found the reorganization more frustrating than fruitful, however.

"I've seen nothing positive and lots of negatives," said David Pensak, corporate adviser for computer technology at Du Pont Co.'s research and development division in Wilmington, Del. "It used to be there was one person you could call to find out everything. Now they have to call a bunch of other places to get the same information."

Still, industry analysts have taken a generally positive view of the restructuring. They said it has reshaped the company with a clearer business model, a tighter market focus and greater accountability from its various

Continued on page 67

Users ponder Notes delivery schedule

BY ROSEMARY CAFASSO
CW STAFF

Acknowledging some confusion surrounding the expected arrival of Notes Version 3, Lotus Development Corp. recently sketched out a shipment schedule for the workgroup software and other key products, targeting early 1993 instead of late 1992 for delivery.

The target dates will cause some users to adjust their implementation plans, but others said they were not counting on immediate delivery of either the new Notes or the next release of 1-2-3 for Windows anyway.

"Years ago, I learned that trying to work a corporate strategy based on release dates is not a good move," said Ronan McGrath, vice president of information systems and accounting at Canadian National Railways.

In an interview earlier this month, John Landry, Lotus' senior vice president of development and chief technology officer, said Notes Version 3 is not behind schedule even though at least one company executive, as well as Lotus partners and industry analysts, had indicated it would ship by year's end. Officially, the company had said Version 3 would ship sometime before mid-1993, and Landry said Lotus is well within that time frame.

Landry said Lotus "didn't have a firm, fixed target date" and had decided as recently as this summer to bundle even more features with the product. In addition, it will contain several promised enhancements, including a text search and retrieval engine, work-flow functions and support for an Apple Computer, Inc. Macintosh client.

"Obviously, we'd like to see it become available sooner," said Chris terMatt, manager of the Knowledge Exchange Group at Andersen Consulting, which, along with its affiliate Arthur Andersen & Co., signed on for 20,000 copies of Notes earlier this year. "The initial plan was to wait until Version 3 was available before rolling [Notes] out. Now so, groups will probably decide to go with Version 2 and take on the migration later."

Yet, McGrath said, "There isn't a staggeringly critical need here," for Version 3. "There are nice things in it. When the features come, we'll use them."

Landry also confirmed that 1-2-3 for Windows Release 2 is slated for an early 1993 shipment. In late summer, Frank Ingari, the company's director of marketing, had indicated it was likely that Lotus would not make the late 1992 shipment date for its Windows spreadsheet.

Release 2 will contain Lotus Chronicle technology, which will bring workgroup functions to the spreadsheet application and allow groups of workers to share a spreadsheet and contribute to it.

Improv, a financial analysis and modeling tool, is on schedule for delivery later this year, Landry added.

Jude Gartland, senior vice president of computer services at Lehman Brothers, Inc. in New York, said his staff is interested in checking out 1-2-3 for Windows Release 2.

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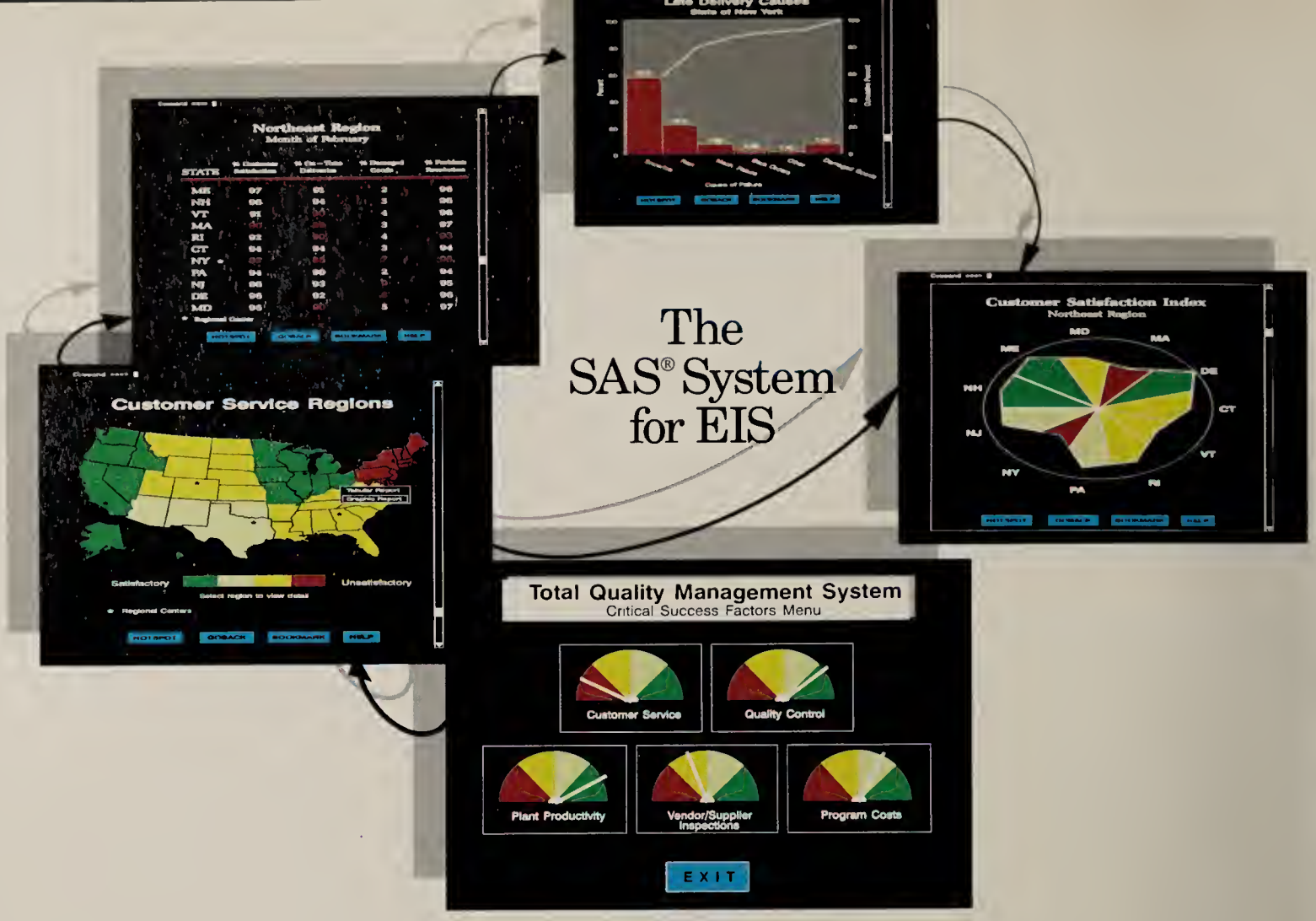
White Paper

Executive Information Systems



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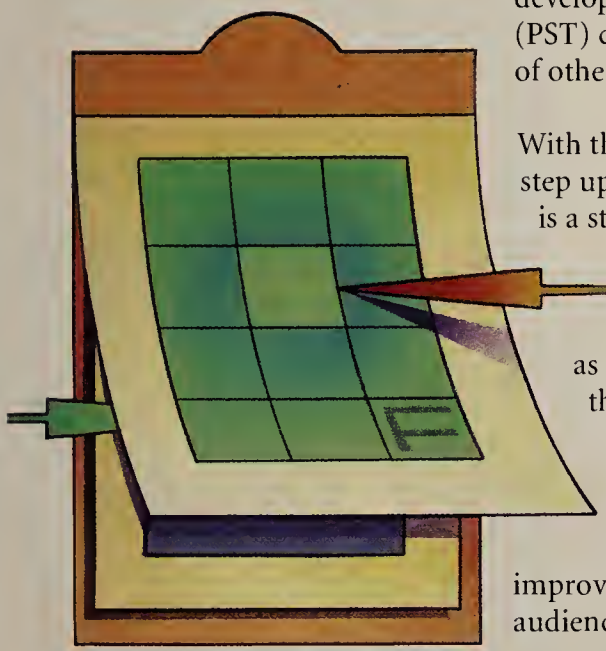
Introduction

During the 1980s, Executive Information Systems (EIS) grew in popularity as executives longed for more information at their fingertips. They wanted EIS applications that provide executive level access to predigested and preanalyzed information from corporate databases.

Survey information collected by IDC indicates that, although the market for EIS is going in new directions, the installed base remains stable. For instance, almost two-thirds of all IBM mainframe installations surveyed indicate that they run EIS applications.

Although the changing EIS market still features a strong high-end, mainframe-based segment replete with familiar vendors and products, a newer market segment is built around PC and LAN installations. It is currently experiencing strong growth — total worldwide installations doubled in 1991 — and vendors are targeting smaller companies and subexecutive levels.

IDC breaks EIS software down to three categories: EIS applications support executive information needs and decision-making activities. Packaged EIS software applications provide sophisticated EIS development tools. Professional Support Tools (PST) combine EIS software with a broad portfolio of other end-user tools such as spreadsheets.



With their user-friendly interfaces, EIS represent a step upward from spreadsheets in complexity. This is a step that an ever-growing and diverse group of users is ready to make.

EIS use is marked by top-down movement as the demand for information access grows throughout organizations. Primary users include not only CEOs, but CFOs and a variety of line managers who can work better by having better information. EIS popularity will continue to increase as improved information is made available to a wider audience of users.

This White Paper was written independently of the Computerworld *editorial department by Clare Gillan and Ken McPherson. Gillan is manager of application solutions at IDC. McPherson is a senior consultant to IDC.*

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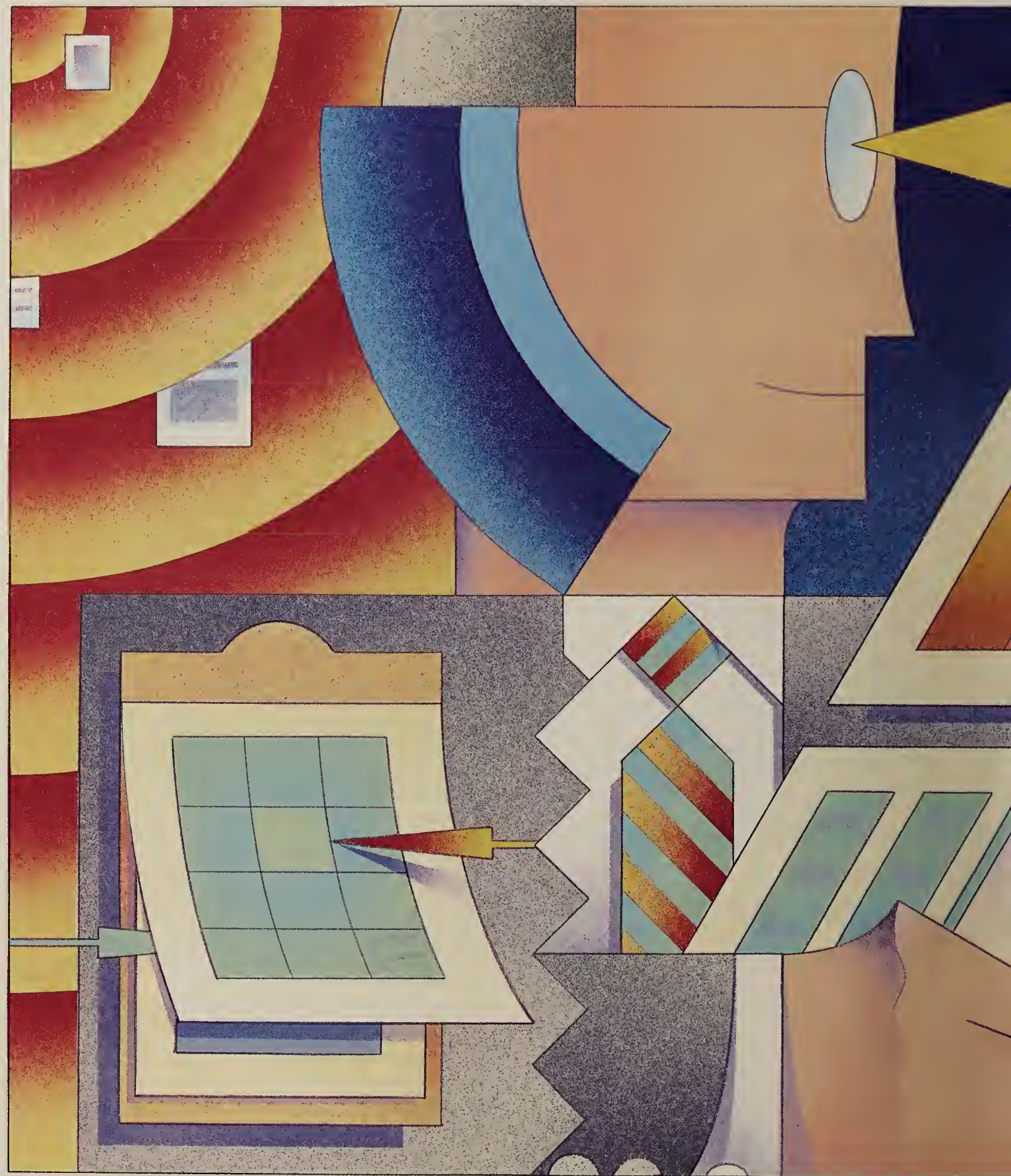
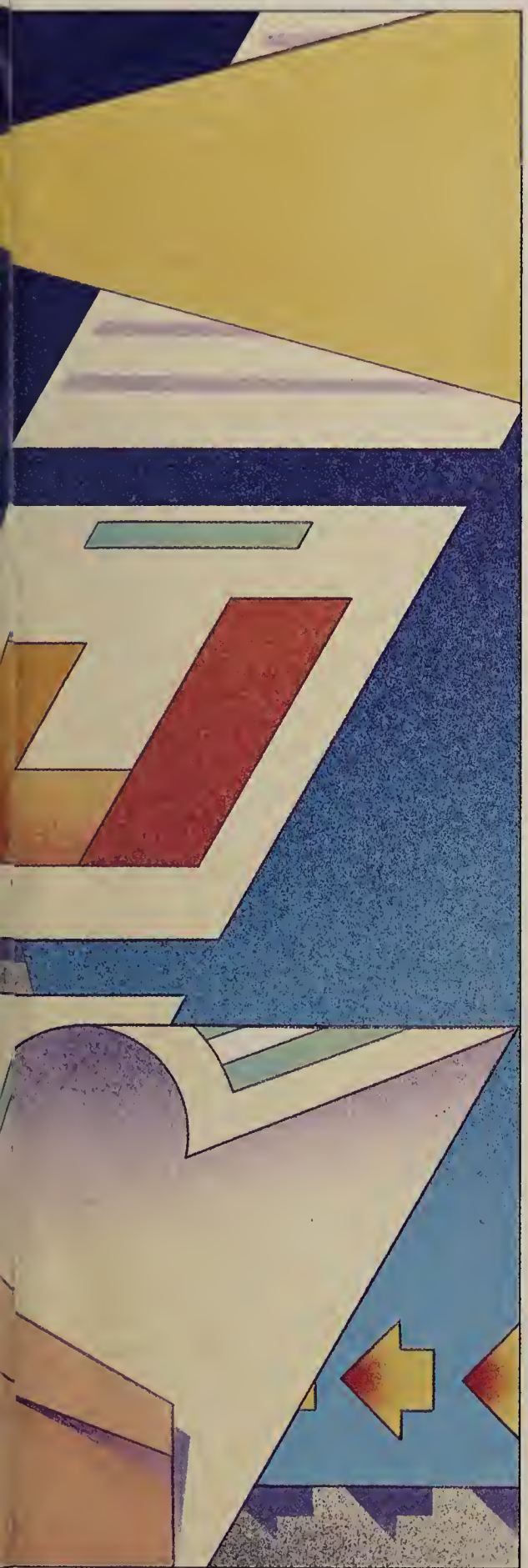




EXECUTIVE INFORMATION SYSTEMS

Executive Information Systems (EIS) provide executive-level access to predigested and preanalyzed information from corporate data bases. After several years of being targeted at executive suites, they are now entering the mainstream of Information Systems (IS) applications. Like many other technologies that have made the transition, EIS will become less strictly defined. As this happens, EIS applications will embrace a range of products targeted to support professional decision-making. New products from traditional vendors and new companies will offer opportunities to IS development managers.

EIS ranked highly among the technology buzzwords of the past several years and EIS vendors attracted substantial media attention. During the early 1980s, the EIS market surged in response to the demand in the executive suite for more information. The 1990s will see EIS moving from the executive suite to professional offices as enterprise

managers and analysts recognize its value.

IS managers in most large organizations have considered EIS applications carefully at one time or another during the past five years. Many adopted EIS technologies. This movement toward wider EIS implementation acknowledges that tools that effectively support top managers can gain entry in IS shops.

Software analysts at International Data Corporation (IDC) recently interviewed 200 information systems managers at IBM mainframe and large Digital Equipment (DEC) IS shops. The feedback from these interviews demonstrates that EIS applications are maintaining their importance in application development decisions. Almost two-thirds of all IBM mainframe IS installations surveyed have installed EIS applications.

EIS applications were also popular in large DEC-based shops. Almost three-quarters of all large DEC installations surveyed have evaluated EIS. And over 40% of the DEC sites installed EIS applications. In addition, many IBM and DEC sites are currently evaluating EIS.

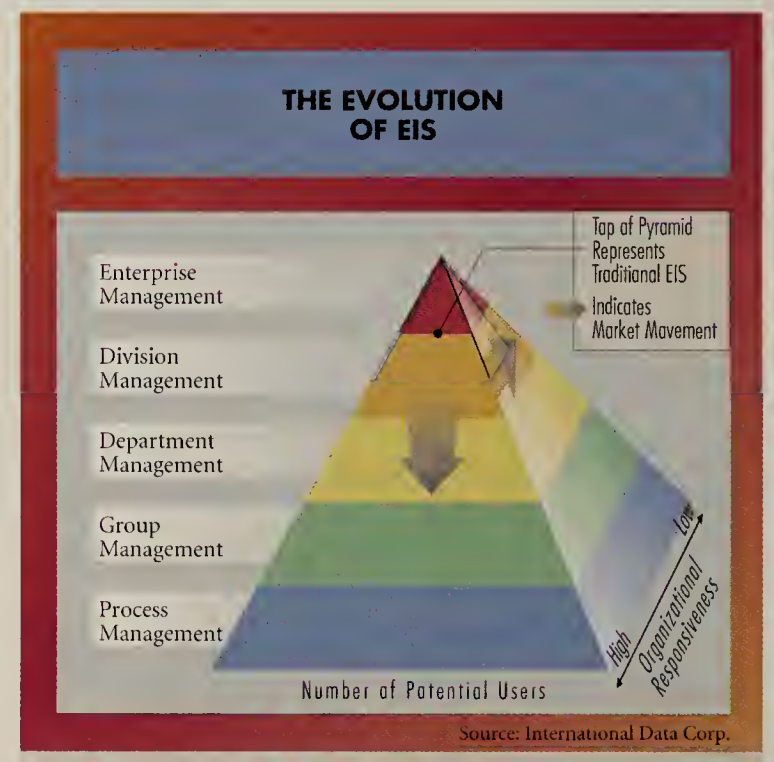
Software vendors recognized and profited from this interest in EIS systems. Annual revenues from packaged EIS software, slightly over $5 million in 1985, topped $100 million in 1991, according to IDC estimates.

THE MARKET DIVIDES

The market for packaged EIS software began to divide in the late 1980s. As a result, one segment of the market is now composed of mainframe-based flagship products such as Comshare's Commander EIS and Pilot Executive Software's Command Center. These systems, which typically involve average installed values in excess of $100,000 target executive suites in the largest corporations. The market for them is approaching saturation; not surprisingly, market growth has slowed. In response, vendors are looking for new markets to sustain their revenue growth rates.

The second market segment features a generation of products focused on PC and LAN installations. This segment is experiencing strong growth, with total installations worldwide doubling in 1991. Products represent the packaged EIS software vendors' efforts to build mass market appeal. They are targeted at smaller companies and departments within larger corporations. Potential users here recognize a need for enhanced management information, but cannot justify, either directly or indirectly, the cost of a mainframe installation.

The effort and cost of assembling and maintaining mainframe EIS applications have dissuaded many potential users from making initial EIS investments. Many others have chosen to place EIS on temporary hold or to implement simpler systems that deliver much of the value of higher cost systems while requiring far fewer IS resources.



EIS is also beginning to move beyond companies that require real time management reactions in response to changing market conditions.

PROFESSIONAL SUPPORT ENVIRONMENT

While the demand for mainframe EIS software products has slackened, IS managers still recognize the need for effective tools to deliver value-added information to senior management and others within the organization. These discerning managers are looking at a broader range of tools which IDC defines as the "Professional Support Tools" (PST).

PST software includes a portfolio of software tools designed to support professionals and managers in their daily activities. The portfolio includes data analysis and query software, financial modeling tools, as well as packaged EIS software. The growing popularity of PST demonstrates how the role of EIS is changing to meet the needs of a larger world of business professionals.

EIS: STILL EVOLVING

Software vendors, industry analysts and academics are engaged in an ongoing struggle to find appropriate terms for application software packages directed to executive and professional users. The confusion and disagreement over definitions and labels reflects a churning market; IS managers' requirements and software vendors' strategies are both moving through a period of major change and turmoil.

IDC software analysts use three different terms to classify professional and executive support applications:

- EIS applications support executive information needs and decision-making activities
- Packaged EIS software provides a sophisticated set of development tools to support EIS application development
- PST combines packaged EIS software with a broad portfolio of end-user tools. These tools include spread-

sheets, decision support and data analysis software.

Packaged EIS software includes Command Center, Commander EIS and the recently announced SAS/EIS from SAS Institute. These software packages are highly sophisticated development tools used by IS staff members to build customized EIS applications. They offer a packaged alternative to the patchwork EIS development approach used in many corporations. These software packages are marketed as "EIS systems."

Some gastronomically oriented consultants compare an EIS application to a pasta machine. The flour, eggs and other ingredients from corporate data bases enter the EIS pasta machine, emerging through the other end as linguine in the executive lunch room. The analogy might be a bit more accurate if the process began with unmilled wheat and a chicken coop, but the concept of extraction, processing and presentation is appropriate.

EIS applications typically include several features, including data extraction/navigation, rules-based logic, graphic presentation and professional workflow. Although many associate EIS applications with well-known packages from a number of software vendors, a majority of users build their own from application development tools.

Navigating through complex and non-integrated corporate data structures is often the biggest challenge for EIS developers. Some EIS include proprietary built-in access to data bases, enabling the system to get at information directly. However, most large EIS applications rely on a permanent staff of information systems data specialists to handle the extraction process, placing the processed information onto an intermediate platform accessed from the executive's EIS workstation. This process is normally termed "staging" in EIS circles.

Rules-based logic, including the basic level of exception reporting, enables systems to predigest information and highlight values that fall outside accepted ranges. Newer systems include more sophisticated analytical tools that examine overall patterns and prepare formal information reports.

Current Satisfaction With EIS

	Total	No EIS	EIS Installed
Favorable/Expand	21	3	38
Favorable/Maintain	17	4	28
Evaluate	32	47	19
Skeptical	10	5	14
Negative	1	1	1
Negative-Ceased	18	33	0
Unsure	1	7	0
Total	100%	100%	100%

Source: International Data Corp.

Among EIS users, a plurality view their systems favorably and would like to expand them.

EIS incorporate and build upon an individual executive's view of what is important. These views — a significant representation of the executive's management expertise — are captured in "what-if" statements, exception reports and internal calculations that are contained in the application's rules-based logic.

TRENDSETTING TECHNOLOGY

Canned EIS software helped pave the way for the introduction of graphic interfaces to the executive suite. EIS displays may use traffic-light-like screens or special color-coded matrices to report on the status of pre-identified standards of corporate performance. EIS' initial distinction as a graphic interface is changing as graphical user interface technologies become more prevalent. Nonetheless, graphic presentation, in increasingly sophisticated forms, remains a critical EIS component.

EIS software developers have incorporated the ability to mimic the normal flow of a specific executive's work pattern. An individual user might, for example, choose to first review key electronic mail messages, then examine several fundamental indices of corporate performance. That individual might then check out current stock prices through Dow Jones data bases, and finally follow up with comments to others in the group.

The EIS environment provides a natural avenue for management communications, and workgroup orientation is rapidly becoming a characteristic of mainline packaged EIS software. In a familiar EIS marketing scenario, an executive reviews a status report, enters either voice or written comments and sends the package through electronic mail to the responsible manager.

The dispersion of EIS applications among professionals in many organizations has rendered the "Executive" in Executive Information Systems an obsolete term. IS managers and corporate professionals now recognize that distributing the power of EIS applications to non-executives can substantially increase overall productivity. The distribution also helps to spread the costs of developing and maintaining a complex EIS environment across more users.

This kind of change will move the EIS market in two directions during the

EIS applications typically include data extraction/navigation, rules-based logic, graphic representation and professional workflow.

remainder of this decade.

First, applications will spread from organizations that require hands-on management toward industries that require less direct management involvement. Companies that require direct management involvement are in a position to gain the most from improved management access to operational information.

"The value of executive information systems can be truly appreciated when they are used to view operational information"

Second, applications will continue to move from the executive suite toward a less glamorous, but typically more demanding, role in group and process management.

In order to accommodate this demand, the broader category of professional support tools provides enhanced data analysis software and other tools to support professionals and line managers. IDC views PST software as the all-inclusive tool set that will be necessary to support both of these market trends.

Professionals managing financial issues continue to use decision support products, and this will remain a prime application for years to come. PST includes these decision support products, but expands the target problem set to include a broader group of job-related functions such as managing projects or quality within an organization and forecasting demand for supplies.

WHAT PEOPLE DO WITH EIS APPLICATIONS

Corporate and information systems managers build EIS applications to support several key management objectives in information-intensive organizations.

EIS applications offer a tool for generating graphic reviews of company information and for electronic mail access. An increasing number of executives and professionals are beginning to use their EIS applications to build "what-if" analyses. They can use corporate information and spreadsheets, or financial modeling packages, for example, to evaluate the impact of pricing strategies.

The immediacy of EIS information is particularly important when used to view operational information. Operational information can lead to necessary and direct management intervention. For example, a quality control manager in a pharmaceutical company can continuously review results of product sampling and machine performance. The EIS helps spot trends requiring preventive maintenance or direct intervention.

From a slightly different perspective, the EIS application can support periodic review of corporate operations. Accounting and financial reviews are typically periodic by nature. A chief financial officer (CFO) may want to view receivables weekly, using a specific technique to identify potential problem customers. Periodic reviews typically involve preparation of summary data on a regular schedule according to predetermined specifications for review.

For some organizations, the EIS becomes an integral part of ongoing operations. These EIS applications provide "Central Control" management capabilities for day-to-day operations.

EIS tools from Comshare, systems management companies such as Legent and home-built EIS applications using different components provide continuous monitoring of network operations. Highly stylized and color-enhanced displays alert systems managers to potential and actual problems in the network and suggest possible solutions. An international package delivery organization, for example, might use an EIS application to monitor air traffic patterns worldwide, diverting flights when necessary to maintain delivery schedules.

THE INTERNAL DEVELOPMENT, OR "ROLL YOUR OWN" APPROACH

Many organizations have created their own EIS applications. Some wanted to develop specific capabilities such as real-time monitoring or specialized decision-making routines. Others simply viewed internal development as a more cost-effective alternative to packaged EIS software. Overall, almost two-thirds of all EIS development activities rely on spreadsheets, word processors, graphics, third and fourth generation languages and other development tools to build their own EIS applications.

EIS application developers frequently choose office and professional software as a foundation for their EIS applications. Over 80% of all EIS developers

use packaged data access, management, analysis and presentation programs to build or complement their applications.

Data base management systems (DBMSs) are one of the most popular tools for EIS development. Developers choose the DBMS (or DBMSs) that are compatible with their other applications and are familiar to their development staff. Virtually any one of the well-known DBMS packages is likely to be used by an EIS application development team.

Spreadsheets, which have been integral to EIS for years, are the second most popular component of EIS applications. These tools provide a combination of functions, including data base navigation, financial modeling and graphics support.

Query/Data Delivery software provides developers with tools to acquire data from multiple data bases throughout the organization. Although SQL is a popular tool for multiple DBMS access, many developers prefer to use tools that read DBMS data directly without going through SQL facilities. These pipelined data access abilities can be helpful when accessing and manipulating massive corporate data bases. Fourth-generation languages and information delivery tools such as SAS System are popular query/data delivery tools.

Data analysis software is involved in EIS development at over 40% of the organizations interviewed by IDC. Typical packages in use at these sites include the SAS System from SAS Institute, and various analysis packages from Execucom — now part of Comshare — Comshare, IRI, MicroSoft and IBM. Several organizations have chosen to develop their own internal analysis packages to meet special organizational requirements. Financial modeling software takes EIS applications back to their roots. Several of the original players in the EIS market migrated from the financial modeling world. Despite this, only 36% of the EIS applications at IDC respondent sites are using financial modeling applications today. This demonstrates the distance covered by EIS applications in their migration from the financial staff. Stand-alone graphics software packages offer an alternative at sites that choose not to install the sophisticated graphics of packaged EIS software. This software may be the sole source of graphics at sites that choose not to use packaged EIS applications.

IMPORTANCE OF EIS DRIVERS
How important are (were) the various people as users of EIS?

	All Sites	No EIS	Packaged EIS Software	Other Components Only
President/CEO	3.67	4.15	3.12	3.37
CFO	4.17	4.52	3.68	3.97
Financial Staff	3.77	3.80	3.75	3.74
CIO/VP/ MIS	3.87	4.13	3.76	3.61
IS Staff	3.40	3.43	3.36	3.38
Other Corporate Mgmt.	3.73	3.65	4.03	3.66
Other Corporate Staff	3.09	2.87	3.44	3.14
Other	1.94	1.76	2.20	2.05

1 = Unimportant, 5 = Dominant

Source: International Data Corp.

Although CEOs are influential, CFOs exercise the most influence when it comes to purchasing EIS systems.

KEY ISSUES DRIVING THE EIS MARKET

Downsizing/Rightsizing

IS staff resistance to downsizing and rightsizing is eroding quickly, requiring EIS vendors to develop down-sized versions of their mainframe-based systems. Vendors have responded with a plethora of new PC and server-based systems, leaving the technology choice in the hands of IS managers.

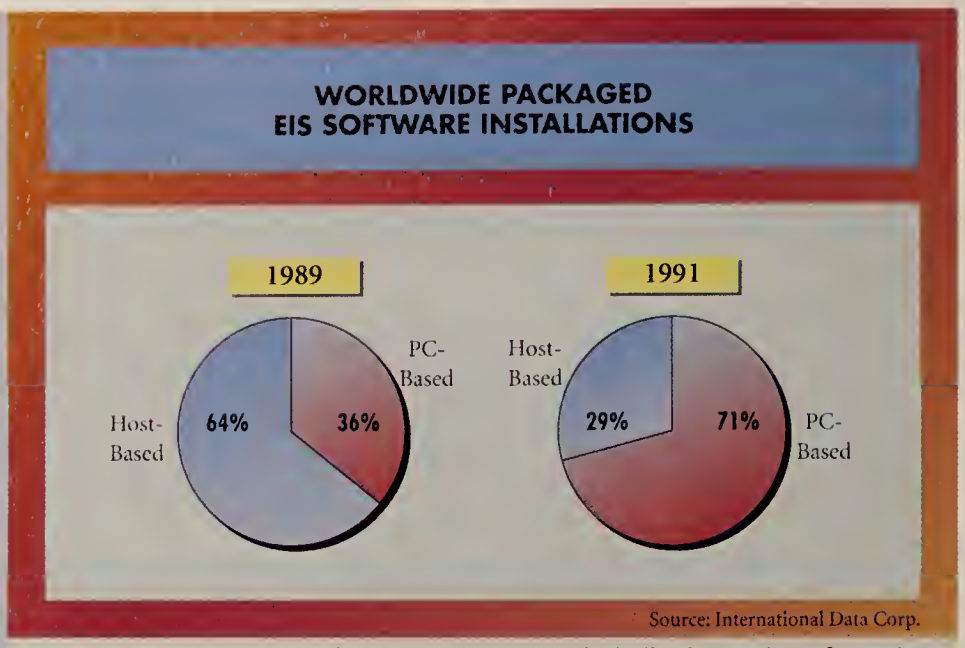
Information technology analysts recognized the critical nature of downsizing almost a decade ago. However, large IS organizations, particularly those supporting large IBM mainframe installations, resisted the drive to smaller systems, arguing that their application loads demanded the power of mainframe-based networks.

These arguments have lost their persuasiveness for many CEOs during the past several years. Downsizing is a key strategy at many IBM mainframe shops, and EIS applications, with their emphasis on graphics and access to multiple data bases on multiple platforms, are natural choices for down-sized applications.The new generation of packaged EIS software changes the basic economics of EIS application development. New products are typically priced as high-end PC software, which obviously makes them far less expensive than mainframe packages. PC software acquisition costs can be less than $1,000 per user, allowing affordable enterprise-wide installations.

PC Compromise

PC-based EIS systems still reflect some compromises relative to mainframe-based systems. EIS applications typically involve extraction and analysis of massive quantities of information, tasks that overwhelm the processing abilities of most current PCs. The difficulty of administering extraction, analysis and graphic presentation by teams of information analysts also strains some LANs. In addition, security remains a problem on more easily accessed PC platforms.

It is important to note, however, that these constraints are fading rapidly. PC-



Although mainframe-based EIS sites will survive, the bulk of executive information systems are now PC-based.

based systems continue their exponential growth in storage and processing power, while PC application vendors continue to improve the security components of their packages. LANs are also becoming more EIS-friendly as they accommodate increased bandwidth.

Platform Portability

Corporate managers are increasing their demands for open systems strategies as EIS technologies permeate their organizations. In response, EIS application developers are placing emphasis on portability — the ability of applications to run on different platforms with nothing more complex than a recompile. EIS applications built on portable software platforms, such as DBMS or query/reporting languages designed to be inherently portable, offer considerable advantages.

Vendors offering these packages are prepared to maintain ports to multiple operating system releases across multiple platforms.

IS staffs will have a difficult burden if they attempt to develop their own application portability. Alternatives, including software-based portability features generally defined as middleware, will offer important advantages as they become established in IS shops.

The Ability to Access Multiple Data Types

The IS world has seen the coming of corporate data integration for several years. Many sites are building, or preparing to build, corporate data dictionaries. They are doing this both to facilitate application development and to coordinate and integrate disparate data base environments.

This integration is a daunting task. IS managers can expect to work with a variety of data structures in realizing it. Most organizations support a variety of data base management systems. Virtually all will be accessing VSAM, legacy and proprietary data bases from older applications.

At a minimum, EIS developers should demand the ability to access multiple data types. EIS development plans should also include the ability to access repository data dictionary information.

Two Possible Directions

EIS applications tend to move in one of two directions. In some organizations, the executive information system reflects the needs of a single executive or a small group of executives. In this environment the EIS application tends to remain rooted in the executive suite. In other organizations, to a database management philosophy. These organizations find that their investment in data access and management can be leveraged across line and staff organizations.

Leveraging the EIS investment involves more than simply providing EIS screens to more people. Line and staff professionals require a more robust tool kit of professional support applications. IS managers can expect these professionals to require statistical analysis and modeling tools, word processing and electronic publishing integration.

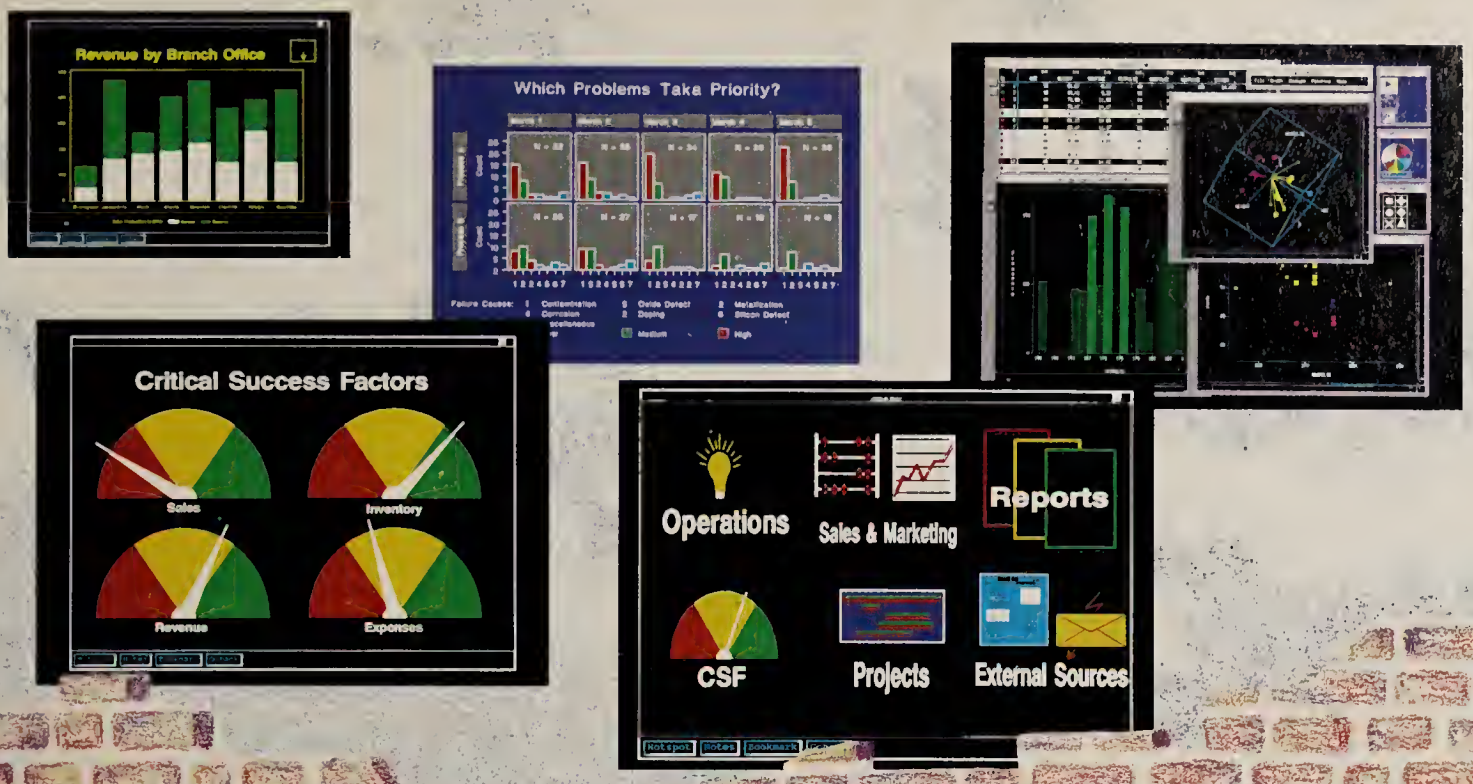
Integration with other Applications

EIS applications frequently function as executive front-ends for other applications. The EIS graphic interface offers a logical and effective vehicle for conveying analyzed and summarized financial information. IS developers can effectively exploit the ability of EIS applications to integrate directly with other types of applications.

The American corporate drive for quality creates a new EIS application area. Statistical quality control procedures generate tremendous amounts of information — information that needs to be analyzed. For example, a typical quality control application will maintain data bases on machinery production levels, product specification variances and maintenance schedules.

Integrated with sophisticated statistical and reporting tools, EIS applications permit quality control managers to quickly reduce this tremendous volume of information. They can easily generate manageable reports highlighting current and potential problems in the production process.

The "drill-down" capability — which points to a data item when viewing underlying data — inherent in most EIS applications allows management to determine underlying causes of quality control problems. Trend analysis is based on time series data bases and analytical tools. It allows quality control managers to examine quality performance over time, ferreting out incidents of slow deterioration and increasing quality variance.



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The applications that drive your enterprise are fully integrated in the SAS System—everything from EIS and decision support to financial analysis and reporting to quality management. This comprehensive approach eliminates the need for single-shot software solutions that have made a patchwork quilt of your applications strategy.

Diverse Client Needs

The specific needs and experience level of every client—from new computer users to seasoned pros—are met through personalized interfaces. Take advantage of icon-based executive information systems, point-and-click menus for business analysts, an object-oriented applications development environment, or a full-screen display environment just for programmers.

Diverse Computing Platforms

The SAS System maximizes the effective use of your entire computing mix—from PCs and workstations to minicomputers and mainframes. You'll have true hardware independence—without sacrificing your ability to exploit the particular advantages of specific environments. Plus the ability to implement cooperative processing by segmenting applications any way you choose.

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Software Sales Division
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IMPORTANCE OF INTEGRATION WITH SPECIFIC APPLICATIONS

	All Sites	No EIS	Packaged EIS Software	Other Components Only
Accounting/Financial				
Now	4.34	4.54	4.37	4.05
1996	4.45	4.64	4.50	4.16
Human Resources				
Now	3.29	3.51	3.47	2.89
1996	3.40	3.61	3.61	2.97
Quality Control				
Now	3.53	3.57	3.73	3.36
1996	3.69	3.62	3.97	3.62
Manufacturing				
Now	2.73	2.27	3.25	2.86
1996	2.94	2.50	3.46	3.11
Distribution/Transportation				
Now	3.18	3.32	3.13	3.05
1996	3.36	3.42	3.56	3.19
Sales Automation and Customer Service				
Now	3.78	3.91	3.64	3.69
1996	3.99	4.05	3.97	3.92
Industry-Specific Applications				
Now	3.75	3.85	3.56	3.74
1996	3.59	3.62	3.78	3.45

1 = Unimportant, 5 = Dominant

Source: International Data Corp.

EIS' accounting/financial roots are evident when its integration with specific applications is revealed.

IS managers can also expect increasing demand for EIS applications oriented toward sales and marketing automation. IDC research into sales force automation shows a clear drive to enhance customer information data bases and sales support information. Targeted at providing immediate information to sales staff, EIS applications can offer dramatic enhancements in the overall effectiveness of these development efforts.

IS managers will be seeing more EIS-compatible capabilities from vendors who offer related software products. These vendors will address the professional software environment market from their own special niches. Enhanced graphic front-ends and stronger data navigation capabilities can transform statistical and spreadsheet packages into reputable alternatives to the traditional packaged EIS software.

Spreadsheet vendors are also strengthening their ability to access multiple data structures through SQL or pipelined techniques. Data access/query/statistical software vendors have been developing strong graphics and navigation technologies for a decade or more.

Not wanting to be left behind, traditional EIS vendors are also adding to their core EIS software. Companies with financial modeling software backgrounds are building relations with third-party application software vendors to expand their markets. Other companies are acquiring or building specialized application development capabilities to add to their existing EIS packages.

From the IS management perspective these integrated packages can offer new alternatives for supporting applications as they migrate through the organization. Different departments and different professional groups need different capabilities. A fully integrated system can allow a single corporate framework to accommodate many, if not all, of these diverse requirements.

BUILDING A VIABLE EIS STRATEGY

EIS developers will need to resolve several key issues as they begin or expand their EIS applications.

Who Will Be Using The EIS?

CEO support in large organizations remains the hallmark of mainframe packaged EIS applications. These applications typically include attention-grabbing graphics, rapid access to high-level information, access to external news sources such as Dow Jones, and action-oriented communications.

CEOs in industries such as consumer packaged goods (CPG) are likely to complement these functions with more sophisticated analytical tools. CPG industries are data-rich and their marketing strategies depend on precise measures of market share and responsiveness. CPG CEOs typically acquire strong data analysis backgrounds as they rise through the ranks. It should be noted that individual tastes dominate system selection at the presidential level.

CFOs of Fortune 100 companies drove much of the development aimed at stylized presentation of corporate information. By contrast, CFOs in smaller, less complex organizations can be resistant to change; accounting is simpler with fewer divisions and subsidiaries.

The financial staff typically requires increased data manipulation and modeling capabilities to support CFO information requests. Professional support for these staff members will reflect CFO requirements, with additional emphasis on hands-on access and manipulation.

Chief information officers or vice presidents of IS frequently play a dual role with respect to EIS applications. On the one hand, they are responsible for developing and maintaining the corporate EIS application. On the other, they use EIS applications for their own personal work.

IS staff members, like financial staff

members, typically require facilities similar to those supporting CIOs. The IS staff is typically responsible for maintaining the data extraction and analysis procedures that underlie executive and professional EIS applications. This means they need specialized tools to develop staged data bases and to perform other functions.

Other industry professionals are playing catch-up to the pacesetters in CPG marketing. Nontechnical professionals have learned to use spreadsheets and PC DBMS to solve problems. New data analysis tools using graphic user interfaces are simplifying access to statistical analysis software. These data analysis packages formerly represented a daunting challenge for some users.

Impact of User-friendly Interface

With user-friendly interfaces, it can be safely stated that EIS now represent a step upward from spreadsheets in complexity — a step that many users are prepared to make. EIS applications open up new data which was previously unavailable to these professionals. The result is "analysis creep" — the tendency for professionals to continuously demand more sophisticated tools and complex data structures.

EIS application developers must recognize the need to anticipate requirements before they actually emerge. For example, EIS developers supporting quality control applications need to monitor developments in visual data analysis. Visual data analysis is a complex graphic application currently moving from engineering workstations to business managers' desks. It provides a sophisticated way to examine data using visual models.

Other developers may need to acquire knowledge about advancing techniques in clinical trials analysis or new tools for joint analysis in market research.

EIS FUNCTIONAL REQUIREMENTS

The range of functions EIS developers may need to support is virtually limitless. However, some key functions and capabilities characterize a clear majority of all EIS installations.

Application Development and System Level Features

EIS application developers need to create and implement a clear development strategy that reflects both the importance of overall EIS trends and the necessity of incorporating an appropriate application technology environment. EIS must include the ability to access multiple corporate data bases, direct pipeline access to multiple data base types and compatibility with existing applications. They must also include data security and integrity; rightsizing to optimize platform utilization, and the ability to front-end existing applications.

There are five important application development technologies. They include: client-server, open systems, electronic mail-enabled applications, imaging and integrated decision support. None is mandatory, but EIS application developers must be prepared to articulate an appropriate strategic direction for any of them.

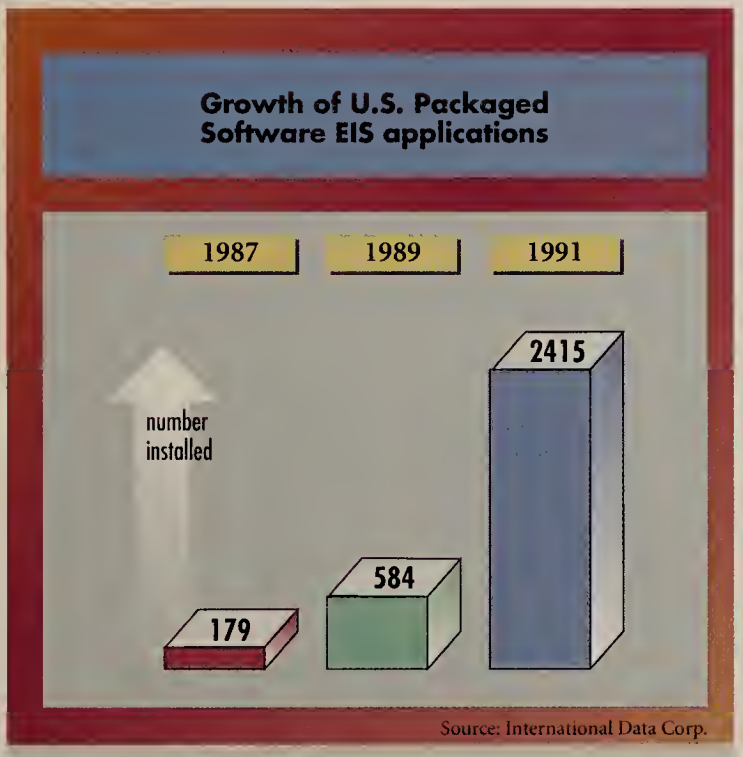
Client-server

Although client-server technologies have generated a great deal of press coverage recently, few information systems managers have a clear view of what the technology involves. Client-server strategies ultimately involve the concept of rightsizing — placing processing loads on appropriate platforms. The massive amounts of data involved in EIS applications make this optimization critical for EIS development.

Open Systems

In the recent past, open systems and UNIX were virtually synonymous. However, the emergence of middleware products and interenvironmental application development tools has significantly changed the open systems landscape.

Increasingly, IS strategists are considering software-based alternatives to UNIX portability. Some users will want UNIX port availability. For many others, the key to open systems is focusing on transportable applications capable of running on virtually all major operating platforms. In the future, there will be more movement toward multiple platforms in an effort to satisfy open systems demands. For EIS developers, the key will be to select the pathway that best conforms to their open systems strategy.



Packaged EIS software applications provide a sophisticated set of development tools.

Electronic Mail

The reality of electronic mail is often less attractive than vendors promise. Despite the disapointments, electronic mail has boomed, especially within large organizations. Some electronic mail

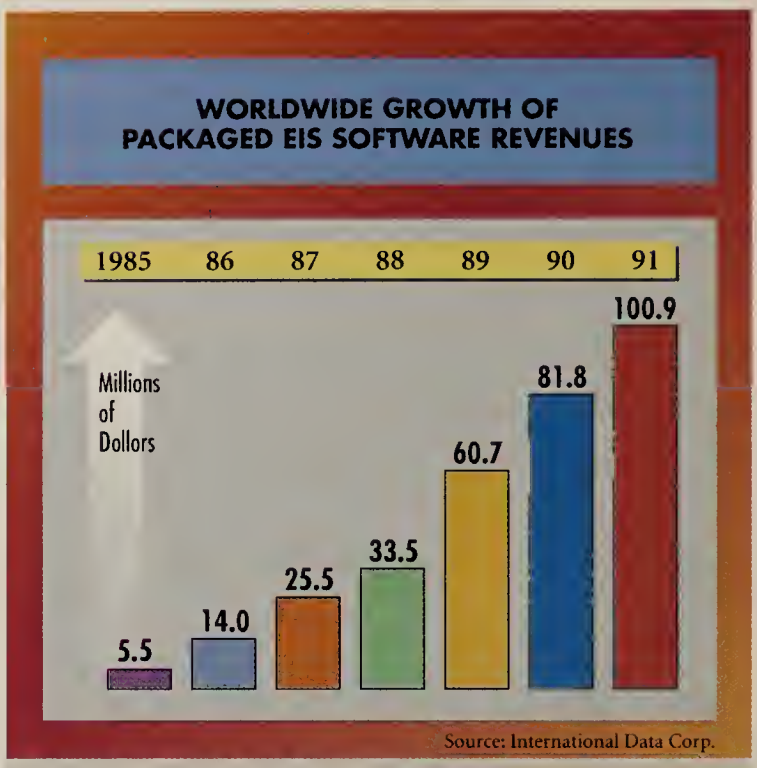
managers are now supporting 20 or more different systems within the same organization. And some IBM mainframe shops are supporting 15 or more different versions of IBM office products.

Amidst these Byzantine network tangles, users find it almost impossible to reach people on other networks. Internodal mail switching can be extremely difficult. Privately, managers recount horror stories about messages to the CEO being inadvertently addressed to stock room messengers with similar names.

But the feasibility of electronic mail-enabled EIS applications is improving. Organizations that have supported 20 or more electronic mail environments are planning to focus their support on five or six installations. As EIS grows in importance, electronic mail will complement EIS as a tool for collecting and distributing information packages throughout the organization. Spreading EIS applications into new areas requires communication support. Electronic mail can furnish the avenue for these critical communications.

Information transported as electronic mail takes advantage of the addressing, routing and security capabilities inherent in electronic mail systems. In the near future, enterprise-wide directories and user-transparent routing promise to produce seamless electronic mail systems.

Another advantage of electronic mail is its ability to appear as data within some applications. Executives facing large volumes of electronic mail can waste precious hours scanning their messages. EIS applications can incorporate the ability to review and prioritize messages, using expert systems techniques to evaluate them and bring critical items up for early attention while less important messages wait to be read at a later date.



Packaged EIS software is becoming more popular as demand grows for sophisticated EIS development tools.

Imaging

Imaging is quietly catching on as IS managers increasingly realize its benefits. Several large aerospace companies are currently building human resource management applications incorporating image management. The development of large corporate image data bases and data bases supporting multiple data types will make imaging an increasingly important part of EIS applications.

Integrated Decision Support

The trend toward enterprise EIS is creating a need for integrated decision support. Consistency between corporate decision support standards and EIS-supported decision support will make training far less of a burden. At the same time, it will eliminate the need to know several different programming languages.

USER FEATURES AND CONCERNS

Most EIS users are looking for time-sensitive solutions, regardless of the technologies they spring from. Typically, senior executives are unwilling to spend large amounts of time learning to use complex systems. The EIS, including its data access functions, must be as transparent as possible to the user. If it is not it will fall rapidly into disuse. It will also fail if plagued by slow response times. Slow response times alienate users and seriously compromise otherwise effective EIS designs.

The ability to reach into corporate data bases is critically important to EIS. Most EIS developers solve the problems of complex corporate data bases by using some combination of staged data and direct data base access. Enterprise data models, enterprise data dictionaries and repositories will open new doors for EIS application developers and IS managers.

Trend analysis also becomes increasingly important as EIS applications move beyond accounting into quality control and distribution management. Trend reporting involves both tool selection and data base design. The tools will enable development of sophisticated statistical applications designed to isolate trends from complex data streams.

Exception reporting is a fundamental element of EIS applications. The complexity of exception reporting, however, can vary significantly. At one extreme, EIS applications employ simple high/low exception reporting. Values are highlighted if they exceed an upper limit or if they fall below a lower acceptable value. At the other extreme, exception reporting becomes extremely subtle. Values may be selected if they are outside a range predicted by random variations around a predicted trend line.

Exception reporting incorporates many of the business rules that incorporate corporate knowledge into the EIS

application. Building these exception rules is alternatively one of the most complicated and interesting aspects of EIS application development.

SELECTING THE APPROPRIATE EIS PLATFORM

Selecting rightsized EIS platforms and appropriate operating environments will remain a challenge for EIS developers. While PC and LAN-based systems open the door to many new EIS applications, they also make it complicated to decide on the correct location for various EIS activities.

The mainframe will remain a viable platform for some applications. Complex extraction and analysis activities on large mainframe data bases are likely candidates. Performing the extraction and analysis on the mainframe reduces the amount of data that must be communicated, minimizing the impact on network bandwidth. Intermediate or final results can then be transmitted to workstations for further analysis and graphic presentation.

Client-server applications are appropriate in many situations. The client-server approach is particularly attractive when intermediate staged EIS data bases must serve the EIS requirements for a workgroup or department. Intermediate positioning balances speed of information access with overall communication requirements to achieve a balanced solution for EIS users.

PC-based systems offer low cost solutions which may be most appropriate for small organizations or departments and work groups in large organizations. PC applications will approach host-based systems in power and features during the next several years, as vendors add features. However, a server-based approach is likely to remain more effective for intermediate data staging, data security and centralized system management.

Meeting professional data requirements often represents the most challenging aspect of EIS application maintenance. The EIS application must be flexible enough to accommodate changing user information requirements. Therefore, EIS application development must be linked to corporate data management tools whenever possible.

WORLDWIDE GROWTH OF PACKAGED EIS SOFTWARE REVENUES

	All Sites	No EIS	Packaged EIS Software	Other Components Only
Client-server				
Now	3.59	3.62	3.78	3.45
1996	4.03	4.11	4.34	3.73
Open Systems				
Now	3.53	3.40	3.74	3.59
1996	4.06	3.95	4.31	4.05
Electronic Mail-Enabled Applications				
Now	3.13	3.26	3.44	2.78
1996	3.47	3.51	3.92	3.14
Imaging				
Now	2.75	2.80	2.97	2.56
1996	3.36	3.45	3.61	3.08
Integrated Decision Support				
Now	x.xx	x.xx	x.xx	x.xx
1996	x.xx	x.xx	x.xx	x.xx
Access to Electronic Mail				
Implementing	3.38	3.68	3.35	2.97
Current	3.26	NA	3.42	3.03

1 = Unimportant, 5 = Dominant

Source: International Data Corp.

Although client-server computing an open systems will experience strong growth in EIS environments, electronic mail, imaging and integrated decision support software will also be integrated to many systems.

REALIZING THE BENEFITS OF EIS GROWTH

The potential for EIS applications is immense. EIS and PST tools are adding capabilities and ease of use at a rapid rate. Corporate data modeling and repositories, electronic mail rationalization and enterprise-wide addressing all are simplifying and magnifying the ability of users to extract knowledge from corporate data bases.

As hundreds of failing banks have discovered, assets have no real value unless they can be used to build corporate revenues. EIS applications offer the critically important capability of converting corporate information assets into bottom-line revenues. EIS are, in many ways, expert systems for business managers. Their value comes not only in their use, but in their development, as the process of building and implementing an EIS teaches managers more about their organizations. Accessing information effectively generates results that build demand for more information.

EIS applications will grow in importance as they become part of mainstream IS applications. While specific styles of EIS development will wax and wane in popularity, IS developers will inevitably build increasing quantities of business knowledge into their corporate information processing systems. This increasing integration with traditional applications will, in turn, simplify information staging. This process of one development leading to another will mark the evolution of EIS.

IDC White Paper

Executive Information Systems

Sun's reorganization improves market focus

CONTINUED FROM PAGE 47

product groups.

David Card, an analyst at International Data Corp. here, said Sun's strategy to put its Solaris operating system on Intel Corp. platforms in 1993 might well have happened without the creation of SunSoft. "But it's more likely to succeed under the new structure," Card said.

"One danger Sun faces is that in speeding up the individual groups, it may put the grand strategic vision at risk," he added. "Sun has always gotten a lot of mileage out of that all-the-wood-behind-one-arrowhead schtick."

CEO McNealy argued that the "arrowhead" of client/server computing still points the Sun companies in the same direction. Sun officials note how several products are heading for the market more quickly because of the reorganization — particularly personal computer products through the SunSelect subsidiary.

Several other products were more efficiently killed off in the past year, such as a Cobol compiler that never made any money. Others were handed off to outside partners to develop further.

Analysts said the restructuring has had favorable results for the Scalable Processor Architecture clone vendors because it erased the months-long delays they often experienced in licensing and obtaining Sun technologies.

"Most customers don't have a clue [about the reorganization], but we've seen a difference because we sit on Sun's DOE [Distributed Objects Everywhere] team," said Jim Stikeleather, IS director at Tampa, Fla.-based Kash-N-Karry Food Stores, Inc. As an important commercial customer, Stikeleather provides Sun with a business-oriented view of its direction with distributed object technology.

Separation key

Separating its hardware and software businesses was particularly key in sharpening Sun's focus in both spheres, he noted. "With SunSoft selling Solaris to anybody for a price, I think that's nothing but good," Stikeleather said. "It's made Sun leaner, meaner and less parochial than in the past."

"More pragmatic" is another phrase that customers and analysts use more often now to describe Sun's attitude shift in the past year. Its 3-year-old feud with the Open Software Foundation (OSF), for example, no longer prevents Sun subsidiaries from offering customers ways — through third-party vendors — to tap into future OSF technologies such as the Distributed Computing Environment.

"I've had a lot of visits from different development groups in Sun, and these people are asking us what we think about products Sun is only thinking about developing," said Bob Vick, systems manager at Fidelity Investments, Inc. in Boston. "I'm not sure this is directly attributable to the reorg, but we have gotten very good service in the past six to nine months."

IN BRIEF

Oracle 7 sets speed record

■ **Oracle Corp.** said its new Oracle 7 relational database set a record-breaking speed of 185 transactions per second in a Transaction Processing Performance Council (TPC) benchmark of a **Compaq Computer Corp.** SystemPro/XL multiprocessor server. Price/performance of the overall system, rated at $800 per TPC-B benchmark, was computed with a 50-MHz **Intel Corp.** I486-based Compaq machine running SCO Unix from **The Santa Cruz Operation**, Oracle said.

■ **Sun Microsystems Computer Corp.** and **Electronic Data Systems Corp.** have expanded their partnership to provide retailers with customized client/server software. EDS has developed automated software tools, based on Sun's Scalable Processor Architecture, or SPARC, platform, that can be used to create customized retail applications. One example is EDS' Incase, an automated software development tool for designing new applications or re-engineering existing mainframe software for Unix-based client/server platforms.

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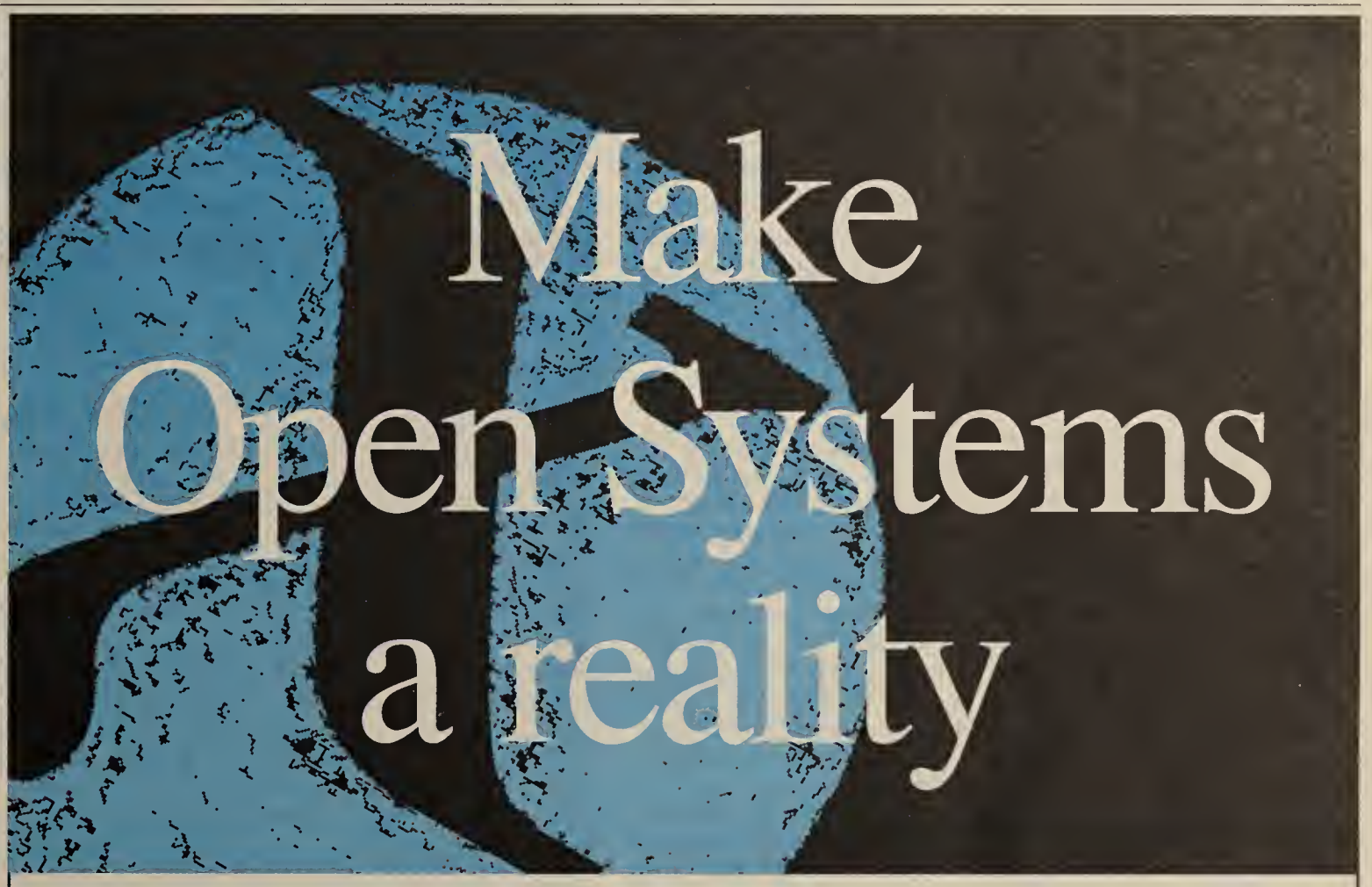

XTRA 92, the International Forum on Open Systems, is at the heart of open systems progress. It gives users their best chance to gain the most up-to-date information on the progress of open systems as a practical proposition. But XTRA 92 is more than just a congress – it is the focus for the future of open systems.

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Whatever your company's business, whatever your organization's task, the knowledge you will gain from Xtra will be vital in planning the future.

And that applies whether you are implementing open systems as a corporate strategy, experimenting or evaluating whether it might be worthwhile.

There are high-level plenary sessions with world-renowned industry experts, business environment sessions, update sessions on buying and using open systems, as well as the in-depth analysis of critical issues that have been a feature of the Xtra Congress in each of its four successful years.

XTRA 92

The International Forum on Open Systems

30 November – 2 December 1992
The Capital Hilton, Washington DC, USA.

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CW/09/92

Wal-Mart deploys handheld computers

BY ELLIS BOOKER
CW STAFF

BENTONVILLE, Ark. — As they walk down the aisles, Wal-Mart Stores, Inc. sales associates will now be able to check inventory and prices and even order merchandise in real time with a handheld, wireless device.

The giant retailer recently announced the completed deployment of wireless systems in all of its 1,804 U.S. stores.

Wal-Mart will use the Dataspan 2000, a spread-spectrum radio system from Telxon Corp. in Akron, Ohio. The value of the contract, which Wal-Mart and Telxon signed last February, was not released.

Although Wal-Mart is not the largest user of wireless in-store systems — experts said they believe Kmart Corp. in Troy, Mich., barely holds that title with systems from Bohemia, N.Y.-based Symbol Technologies, Inc. — the size of its commitment is still notable, industry analysts said.

"They tend to do the best benchmarking in the retail industry, so when they deploy, it means [the technology] has passed some very rigorous tests," said Thomas H. Friedman, editor of "Retail Systems Alert," a monthly newsletter based in Newton, Mass.

More power

Wal-Mart has relied on wireless systems in its stores since 1983. What makes the current generation of systems important, according to Wal-Mart Executive Vice President and Chief Information Officer Bobby Martin, is their increased computer power and the fact that they employ spread-spectrum radios. Spread-spectrum offers far more bandwidth than the narrowband systems of a few years ago.

"The big advantage is the ability to take all your computer capacity and give it to the mobile worker," Martin said.

For instance, in one application already in production, the mobile terminals can display a simple graphic showing five weeks of sales trends.

"We never could have done that with the narrowband systems," Martin said, adding that Wal-Mart and Telxon are working on ways of delivering actual images of goods to the portable systems.

Friedman calculated that the Top 10 retailers are using between 15,000 and 20,000 handheld wireless units. But this figure will balloon to 160,000 devices within five years, he said.

Currently, the application of wireless in retailing is generally limited to real-time price verification and inventory tracking systems.

Yet in the future, Friedman and others predicted, "large-format" stores will turn to spread-spectrum radio as a local-area network infrastructure, connecting handhelds, new generations of wireless (and possibly mobile) point-of-sale (POS) systems and even electronic shelf labels.

Wal-Mart, for example, has experimented with wireless POS systems for sidewalk sales for the past year. While these systems still need some refinements, Martin is bullish on their value. "They'll give us expandability and flexibility," he said. "We'll be able to take a cash register anywhere there's an electrical outlet."

Each Wal-Mart store will feature the following configuration:

- Telxon's Gateway Connnectivity Processor and a radio-frequency communications controller.
- Eight to 16 Telxon Portable Teletransaction Computers, integrated with laser-based bar-code scanners from Photographic Sciences Corp.
- Spread-spectrum radios from Telesystems SLW, Inc., a Telxon subsidiary.

Caching prod aids NFS users without server

BY ELISABETH HORWITT
CW STAFF

PITTSBURGH — A small company is making a big impression among Fortune 500 users who want to ensure that Network File System (NFS) local-area network users can still get the key files and software they need, even when the server becomes temporarily incapacitated.

Interstream, Inc.'s eNFS Personal File System (PFS) builds on an Interstream product, eNFS/Cache, which sets up a local disk cache that contains all the files and software a user is using on a given day, according to Bruce DaCosta, Interstream president. As a client accesses the server, "NFS caching has been keeping copies of everything you've touched on servers," he added.

Extending that concept, eNFS PFS sets up an interaction between file and server so that the cache contains "everything you've written to a server since the time you turned your system on," and the server is apprised of any changes made to the client's files, DaCosta said.

"We have a logging system so that as the user creates data on the client, it knows how to recreate that data on the server," keeping the server current, he added.

In effect, eNFS PFS "keeps a hot repository of most frequently used things you've touched [on the server], so when it is not responding, you can fill requests [for data] out of the local cache," DaCosta said.

When the server comes back up, the program automatically makes the reconnection and writes the client's changes to files into the server's files, he noted.

Jack Stanley, vice president of operations at the *Houston Chronicle*, has been asking Interstream to deliver a product such as eNFS PFS for some time, he said. The *Chronicle* has been using eNFS/Cache to "trim our requirements on new and existing local disk drives," he added. "We don't want diskless workstations, but we don't want giant drives, either."

By ensuring that relevant files and software packages are in the cache, eNFS/Cache minimizes the number of files users must keep on their local disks permanently, Stanley said.

Quicker response

The program also limits the need for clients to keep returning to the server for a piece of data or program, as is often the case with NFS client/server installations, he added.

As a result, eNFS/Cache speeds up response time for users and minimizes network traffic, Stanley said. "I may use Lotus only once a week, but when I do use it, it goes into the cache so I can use it faster."

Interstream's new offering anticipates that the market is heading toward giving "a bit more responsibility and capability to [LAN] clients," said Tom Wood, a senior analyst at Business Research Group, a Newton, Mass., research company. The product's one drawback is that it only works on Sun Microsystems, Inc. servers running NFS.

The eNFS PFS product is available for $495 per NFS client, with eNFS/Cache included, Interstream said.

The company is looking at porting its eNFS line to Hewlett-Packard Co. and IBM Unix workstations, DaCosta said.

NEW PRODUCTS

Unix

Statware, Inc. has introduced Statit 3.0, an upgrade of its graphical data analysis system.

According to the company, Statit 3.0 provides statistical quality control for Unix-based systems.

The product's menu interface uses point-and-click or command-line input and can be changed or expanded; it also offers context-sensitive Help.

Statit 3.0 features include tabular reporting, user-designed data entry forms, design of experiments and new contingency table statistics, among others. Prices start at $1,090.

Statware
260 SW Madison Ave.
Corvallis, Ore. 97333
(503) 753-5382

Mercury Interactive Corp. has announced XRunner, an automated software testing system.

According to the company, XRunner was designed for applications running on Hewlett-Packard Co.'s 9000/700 series Unix workstations. The product is a high-end testing solution for X Window System-based systems that works through the graphical user interface in a manner similar to the way in which users manually test software.

Pricing for the XRunner base package with five licenses begins at $50,000.

Mercury Interactive
3333 Octavius Drive
Santa Clara, Calif. 95054
(408) 987-0100

Workgroup software applications

Project Software & Development, Inc. has announced Project/2 Series X project management software.

Project/2 Series X offers a new graphical user interface and has multiproject and application enabling functionality. Features include open architecture and access to SQL databases. The product provides capabilities such as data manipulation, full scheduling and cost functionality, system integration and customization.

Project/2 Series X prices start at $8,000 per single user and $24,320 for a four-user local-area network.

Project Software
& Development
20 University Road
Cambridge, Mass. 02138
(617) 661-1444

The MathWorks, Inc. has started shipping Version 4.0 of Matlab for Sun Microsystems, Inc. SPARCstations.

The product was designed to provide power and performance in a seamless technical computing environment for numeric computation and visualization, the company reported. New functionality in this version includes sparse matrix support, object-oriented graphics, sound output and graphical user interface controls.

A single-seat license for the product costs $2,995.

MathWorks
Cochituate Place
24 Prime Park Way
Natick, Mass. 01760
(508) 653-1415

Corel Corp. and Unisys Corp. have announced CorelDraw for CTOS workstations.

CTOS is a Unisys system designed primarily for large business automation applications. CorelDraw is a vector-based drawing module. Running under CTOS III, the CTOS version includes such effects as the ability to add true mathematical perspective and extrusion, to envelop text and graphics in free-form shapes and to blend colors and objects.

The product has text handling, which enables the user to transform text into logos and headlines, and it includes a type library and more than 4,000 clip-art and symbol images.

CorelDraw for CTOS costs $595.

Corel
1600 Carling Ave.
Ottawa, Ontario, Canada
K1Z 8R7
(613) 728-8200

Qualix Group, Inc. has introduced SayIt, a software product.

According to the company, SayIt has a macro-building capability that enables users to operate their Sun Microsystems, Inc. workstations with voice commands. Users have the choice of activating user-definable commands such as sound, mouse, keyboard or Unix shell script functions with a single command or by keyboard or mouse.

The product costs $295. It has a limited introductory price of $195.

Qualix Group
No. 224
1900 S. Norfolk St.
San Mateo, Calif. 94403
(415) 572-0200

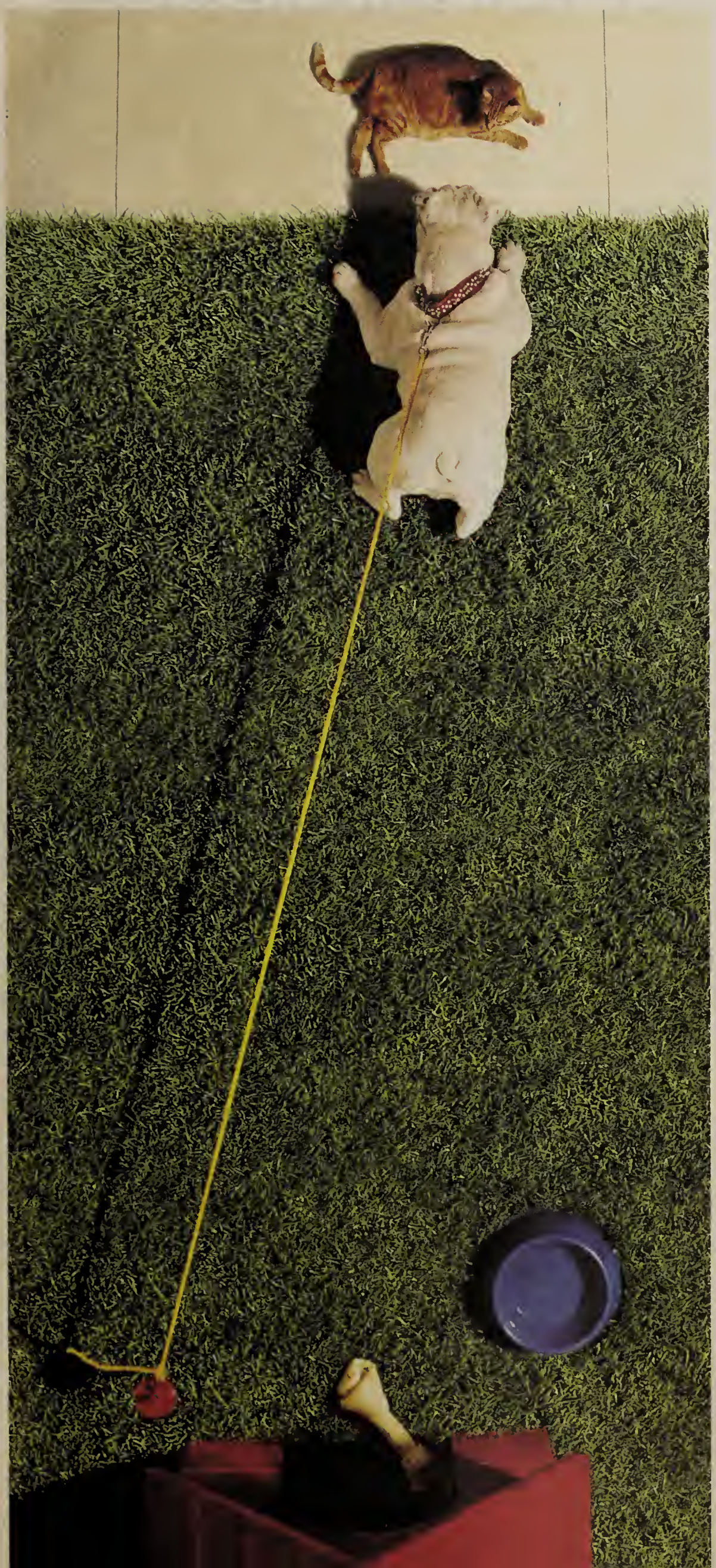
Modems

ZyXel USA has introduced the ZyXel RS-1600, a rack-mounted, modem-management system.

The product operates over dial-up lines providing users with control over hundreds of local and remote devices from a single personal computer, the company reported. Without disturbing main user data traffic, the ZyXel RS-1600 automatically monitors total network performance, managing the growth of large corporate modem networks.

The ZyXel RS-1600 costs $1,795.

ZyXel USA
4920 E. La Palma Ave.
Anaheim, Calif. 92807
(714) 693-0808



Until now, network printers have had the same fifteen-foot restriction.

With HP network-ready LaserJets, you can put your printers where your users are.

Now you can forget about tethering your printers to some faraway server. Because network-ready LaserJet printers can be placed anywhere along your network. Just plug them in as you would PCs and you're ready to roll.

Since you're putting printers by your users, it's as if you're giving them their very own personal printer. Which means they won't have to travel as far for output. Because they're closer to the printer, they can handle some of the routine maintenance tasks, such as paper loading, themselves. Best of all, you won't have to contend with extra boxes, wires or power cables.

HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX®, Macintosh, and PC operating systems, call **1-800-752-0900,** Ext. 3073 for the HP Connectivity Solutions Guide.

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BUYERS' SCORECARD

Notework posts top E-mail software score

BY DEREK SLATER
CW STAFF

Notework Corp.'s Notework ran away from the pack, finishing with the highest user satisfaction score in the Buyers' Scorecard on electronic-mail software packages. Notework earned an overall score of 87, keying on its ease of use.

Runner-up WordPerfect Corp.'s WordPerfect Office scored 81 overall, followed by Microsoft Corp.'s Microsoft Mail with 78, Lotus Development Corp.'s CC:Mail with 77 and Da Vinci Systems, Inc.'s Da Vinci EMail with 76.

The E-mail market race has heated up dramatically during the past two years, with industry bruisers Microsoft and Lotus jumping in with the acquisitions of Network Courier and CC:Mail, respectively. The rising interest in mail-enabled applications — which use E-mail as a medium to trade files or data updates, for example — promises further expansion for E-mail packages. Microsoft and Lotus have announced competing application programming interfaces for standardizing the development of mail-enabled applications.

One way Notework combats the marketing muscle of its larger competitors is to give users a free 30-day trial period. Notework keys on its speed, ease of installation and ease of use — three areas in which its users gave it very high satisfaction marks. The product runs on Novell, Inc. NetWare networks under both DOS and Microsoft's Windows, automatically adapting to whichever environment the user is working in. It requires 5K bytes of random-access memory. The company is based in Brookline, Mass.

WordPerfect Office earned solid scores in service and support and in messaging capabilities. The software also recorded the highest score in printing and word processing capabilities. WordPerfect Office is tightly linked to the company's namesake word processor.

Microsoft Mail scored highest in one area: storage and retrieval of messages. Users noted a relative weakness in the area of gateways for linking systems across local-area networks, which they said were difficult to use.

The installed base leader, Lotus' CC:Mail, finished in fourth place. CC:Mail's standing was hurt by low scores in price and ease of administration.

The cost of gateways to other systems was a particular sore spot.

Da Vinci EMail is produced by Da Vinci Systems in Raleigh, N.C. The Da Vinci product placed high in ease of use but earned low satisfaction scores in several areas, including service and support, mail server maintenance and security. A new version of the Windows product began shipping on Oct. 12.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assigned 1-to-10 ratings based on their satisfaction with their E-mail software packages in 13 specific categories. Users also rated the importance of each category. (See the methodology on page 72 for a complete description of the scoring process.) •

E-mail software

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 31 users for Notework, 49 users for WordPerfect Office and CC:Mail, 41 users for Microsoft Mail and 25 users for DaVinci EMail.

Total possible score 100 **Mean score** 80

Product	Highest ratings	Lowest ratings
Notework's Notework SCORE 87	Ease of use	Printing and word processing
	Ease of installation	Gateways
	Sending and receiving messages	Storage and retrieval
WordPerfect's WordPerfect Office SCORE 81	Vendor service and support	Ease of installation
	Ease of use	Storage and retrieval
	Sending and receiving messages	Mail server maintenance
Microsoft's Microsoft Mail SCORE 78	Ease of use	Printing and word processing
	Price	Gateways
	Sending and receiving messages	Documentation
Lotus' CC:Mail SCORE 77	Sending and receiving messages	Printing and word processing
	Ease of use	Documentation
	Security	Vendor service and support
DaVinci Systems' DaVinci EMail SCORE 76	Ease of use	Printing and word processing
	Sending and receiving messages	Documentation
	Storage and retrieval	Vendor service and support

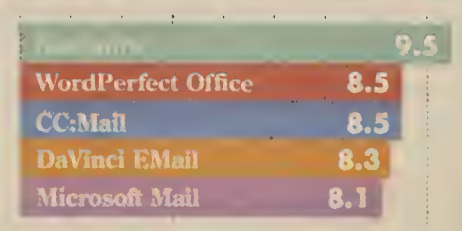
RATINGS IN ORDER OF IMPORTANCE

Notework garners the highest satisfaction rating in the five areas most important to users, with strong ratings in sending and receiving messages and ease of use

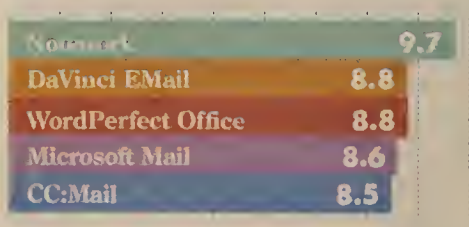
(Additional ratings on page 72)

User importance rating:

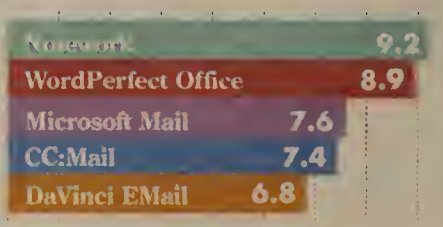
9.3 Sending and receiving messages



9.2 Ease of use



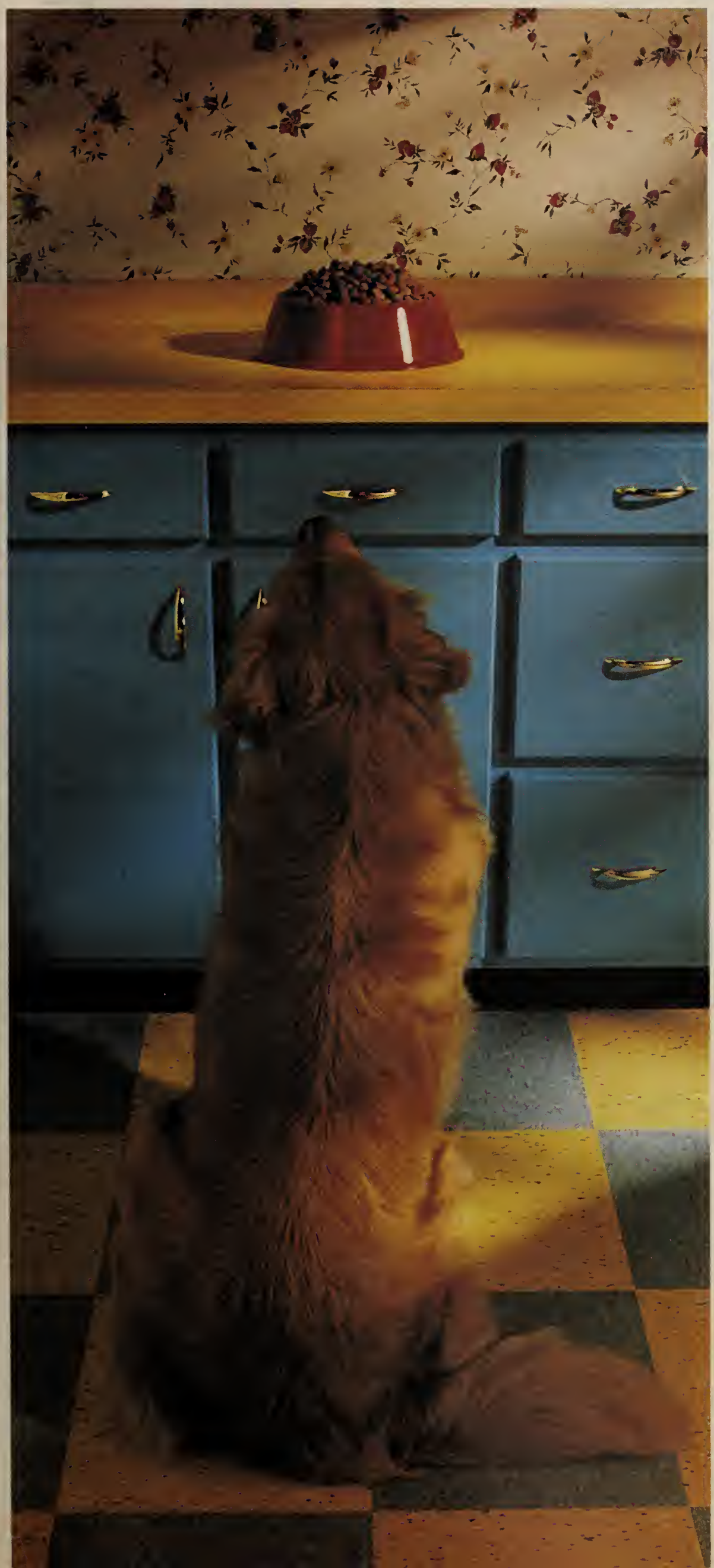
8.5 Vendor service and support



8.4 Security

8.3 Ease of administration

8.2 Storage and retrieval of messages



Until now, waiting for network printing has required the same amount of patience.

HP network-ready LaserJet printers help your users get their output faster.

With an HP network-ready LaserJet printer, your users won't go begging for fast output. Network-ready LaserJets avoid parallel bottlenecks and print up to fifteen times faster than ordinary machines. Since your file server is relieved of some print-server functions, your printing network flexibility increases almost immediately. You'll enjoy faster transaction times. Greater security. And increased speed across your entire system.

HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX®, Macintosh, and PC operating systems, call **1-800-752-0900,** Ext. 3074 for the HP Connectivity Solutions Guide.

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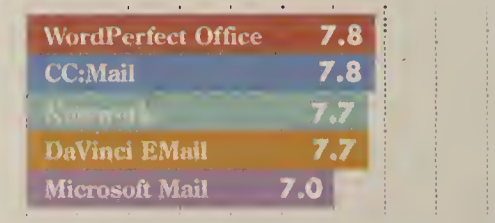
RATINGS IN ORDER OF IMPORTANCE

(E-mail software, continued from page 70)

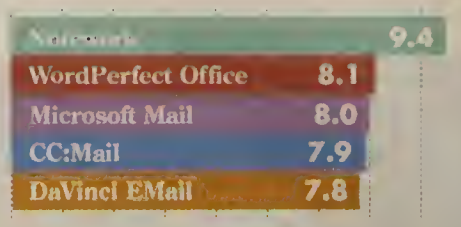
Notework and WordPerfect Office top the remaining categories, with Notework scoring highest in four of seven areas

8.2 Mail server maintenance

8.0 Tools/Gateways for linking systems across LANs



8.2 Speed

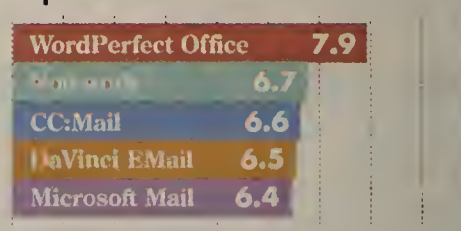


7.9 Documentation

7.8 Price

7.6 Ease of installation

7.6 Printing and word processing capabilities



Verbatim

What do you like best/least about this product?
(Responses are based on most frequently stated answer. Quotes are selected from user responses.)

Notework

Likes
Ease of learning
"Users wanted something easy to use, and this takes about five minutes to learn and use."

Dislikes
Limited features
"It has no advanced features like spell checking, and remote dial-up should be easier."

WordPerfect Office

Likes
Ease of use
"It uses the same command keystrokes as their other products."

Dislikes
Limited features
"The scheduling and administration features are not as good as they could be."

Microsoft Mail

Likes
Ease of use
"It's so simple you don't need to train people to use it."

Dislikes
Lack of options
"It lacks some features, such as forwarding, that are standard in other packages."

CC:Mail

Likes
Ease of use
"It's easy to use, and you can send documents – even CAD drawings – across it."

Dislikes
Lack of features
"It's lacking in electronic forms and templates."

DaVinci EMail

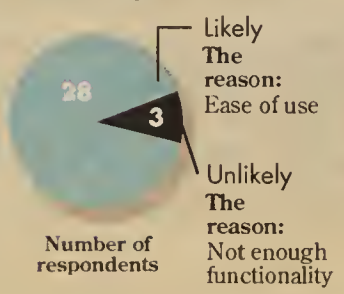
Likes
Ease of learning
"It is user-friendly – very visual."

Dislikes
Word processing features
"The word processing functionality is virtually nonexistent."

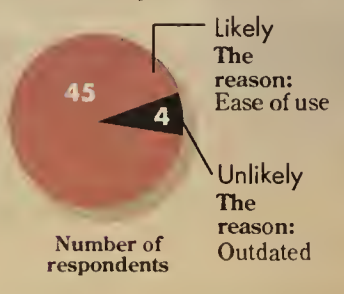
Loyalties

Would you buy the product again?
(Reasons are based on most frequently stated answer)

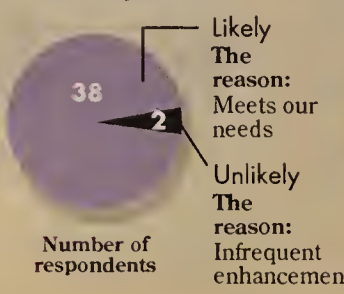
Notework
Responses: 31



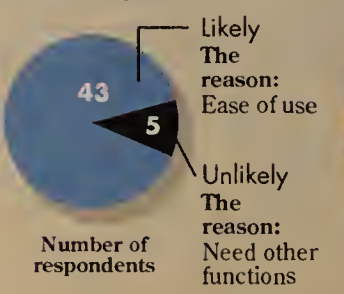
WordPerfect Office
Responses: 49



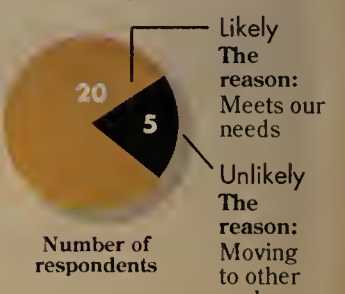
Microsoft Mail
Responses: 40



CC:Mail
Responses: 48



DaVinci EMail
Responses: 25



Vital statistics

Total number of respondents: 195

What is your title?

CIO/VP/IS director	27
IS manager	29
Network administrator	28
Systems analyst	25
E-mail administrator/Other	86

How long have you been involved with E-mail systems?

Five years or more	83
3-4 years	43
1-2 years	59
Less than one year	9
Don't know	1

How many users have access to this E-mail system?

500 or more	47
150-499	49
50-149	41
25-49	32
Under 25	25
Don't know	1

Are you using the Windows or DOS version?

Windows version	96
DOS version	99

METHODOLOGY

User names were obtained from a combination of vendor and nonvendor sources. First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results.

The response base was 31 users for Notework Corp.'s Notework, 49 users each for WordPerfect Corp.'s WordPerfect Office and Lotus Development Corp.'s CC:Mail, 41 for Microsoft Corp.'s Microsoft Mail and 25 for Da Vinci Systems, Inc.'s Da Vinci EMail.

Users rated their satisfaction with their installed products and were not asked to compare or rate one product directly against another in the Scorecard.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for remaining categories.

3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100; the ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10.

Numbers were rounded off wherever necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following individual and firm for their assistance in preparing this Buyers' Scorecard: CW Database Division; Eric Arnum, Electronic Mail and Micro Systems.

It's never been easier to manage your entire printing network.

With HP network-ready LaserJet printers, you can monitor your network right from your desk.

HP network-ready LaserJets are actually seen as additional nodes on your network. Which allow you to manage from one location and take full advantage of the features in your network management software. There's even a new diagnostic feature which lets you track the success of data transfer between your server and a network-ready LaserJet.

Network-ready LaserJets were engineered in cooperation with NOS vendors. So they work seamlessly with your current network and operating system. Including Novell Netware (Novell-certified), 3COM 3+Open, Microsoft® LAN Manager, and IBM LAN Server. Or the HP-UX, SunOS, and SCO UNIX® operating systems. Even Macintosh environments.

HP LaserJet III *HP LaserJet IIISi* *HP LaserJet IIID*

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only $695-$895.*

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Right-sizing.

The perfect system isn'

There are trends and fashions even in the logical world of IS, and right now "down-sizing" is a hot one. You read about it all the time, usually accompanied by an obituary for mainframes.

Needless to say, this gets our attention at IBM, and not just because we make big systems.

We make systems of every size, and based on experience with real customers, we'd say that "right-sizing" is a more useful term than "down-sizing." Especially since a number of companies described as down-sizers not only keep their mainframes, they use them as actively as ever.

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what's fashionable, it's what fits.

To us, the real challenge is choosing the right *combination* of systems, not just for running client/server applications but for managing their complexity.

Open, distributed environments can make heavy demands for storage, security and network management—jobs that mainframes are made for. Suddenly companies who never dreamed of owning IBM ES/9000™s will praise their arrival but not because they're big, because they're right.

Meanwhile, other companies who chose mainframes ten years ago may be considering other options like AS/400®s or RISC-based networks, and we're helping them do it.

For example, while Lincoln National Life has a network of IBM RISC System/6000™s for running client/server applications, the University of Virginia Medical Center chose an ES/9000 for developing and processing medical record applications. For Royal Caribbean Cruise Lines, an IBM AS/400 is just the ticket for booking passengers. Who's right? They all are.

What's right for you? Call us, we can help you decide. Believe it or not, we aren't biased about system types. We make all types.

IBM®

Build strong networks eight ways.

Today, no company can afford networks that fail. Here's Chipcom's recipe for healthy networks that keep running.

1. Automatic self healing. With Chipcom's ONline™ System Concentrator, networks can automatically reconfigure themselves around faults. And keep running, without users even being aware a problem exists.

2. Port-switching flexibility. When performance slows, or a segment stops, you can simply switch users from the offending network to a backup.

3. "No sweat" hot swaps. Virtually any element of the network, including power supplies, repeaters, MAUs, terminal servers, bridges and routers, can be replaced as needed without disturbing network users.

4. Built-in redundant power supplies, including dual power cords for no-interruption service.

5. Cable/link redundancy when and where you need it, regardless of the media you're using: Fiber, shielded or unshielded twisted pair, co-ax, or any combination.

6. Fault-tolerant bridging, too. Chipcom offers fault-tolerant bridge modules capable of accommodating link failures.

7. Network Control System software. Software that lets you perform an autopsy after the network dies isn't much help. Our NCS software is designed to help your network self-heal, so the network stays up until—and while—you repair the fault.

8. Not even the CFO can fault it. Because with Chipcom, you leverage your network investment. You slash the cost of network downtime and maintenance. And you build a network that neither technology nor your company's growth will obsolete.

And those are pretty strong arguments. No matter how you slice it.

NETWORK RELIABILITY

LEARN HOW TO BUILD A STRONGER NETWORK.

Avoid the major causes of network failure.

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Salomon Brothers puts chargebacks on-line

BY THOMAS HOFFMAN
CW STAFF

RUTHERFORD, N.J. — Salomon Brothers, Inc. is reaping big benefits from a newly automated chargeback accounting system that tracks the size, frequency and number of data packets distributed over its Transmission Control Protocol/Internet Protocol (TCP/IP) Ethernet wide-area network.

Until recently, only a handful of user companies had been able to develop such an on-line system. Earlier this month, Salomon Brothers joined those ranks.

According to Frederick Pinto, vice president of information systems security and business support at the $3.53 billion financial services firm, the company has developed an internetworking billing system combining commercially available software and proprietary systems developed in-house. Pinto said Salomon Brothers can now track its worldwide internetworking costs efficiently by department.

> THE SYSTEM helps Salomon Brothers keep track of costs and forecast IS budgets.

The internet billing system is based on an IBM MVS-based software package developed by Computer Associates International, Inc. called CA-PMA/ChargeBack. It runs on Salomon Brothers' IBM 3090 using an IBM DB2 relational database management system. It was designed to process data on chargebacks for IS services ranging from CPU and direct-access storage device use to TCP/IP Ethernet WAN internet use.

Pinto said the system helps Salomon Brothers keep better track of its IS costs and forecast departmental IS budgets.

The mainframe system is linked to data-capturing devices that run on proprietary software. Pinto said these systems meter the size and number of data packets each Salomon Brothers department sends over its worldwide WAN. The data-capturing devices return internet data to the mainframe, which processes chargeback information using the CA software package. Pinto declined to elaborate.

Todd Dagres, an analyst at The Yankee Group in Boston, said he was impressed with the sophistication behind Salomon Brothers' chargeback system because he said there is a dearth of accounting packages for tracking corporate internet traffic.

However, Dagres said most users would shy away from a mainframe-based system in favor of a less expensive server- or workstation-based system. "Other users would probably prefer to run a chargeback system on a Sun SPARCstation server instead of using more mainframe MIPS. We're seeing a maturing of the internet market, and cost is becoming a major issue," Dagres said.

Pinto said Salomon Brothers may consider a client/server-based chargeback system, but he said no changes would be made until at least 1994. Besides, Pinto said, the current system will have paid for itself by then. Pinto would not elaborate on the cost to develop the system, although he did say a mainframe-based system will pay for itself in two to three years because so many of the company's applications are mainframe-based.

"I'm impressed that Salomon is looking ahead by putting the chargeback system in place before expanding its client/server environment," said Rick Villars, an analyst at International Data Corp. in Framingham, Mass.

Villars said it makes sense for Salomon Brothers to develop a mainframe-based chargeback system first, since the bulk of its financial applications are still mainframe-based. Plus, IBM Systems Network Architecture (SNA) users have increasingly expanded their IBM host connectivity beyond SNA networks to tap TCP/IP interoperability.

Salomon Brothers considered other chargeback accounting systems to govern its internet traffic when it began looking for one last year, Pinto said.

However, the closest rival to the CA-PMA/ChargeBack software package was five times more expensive and quite cumbersome, he said.

Pinto said the chargeback system has yielded several key benefits. For example, by switching from a manual billing process to an automated chargeback system, Pinto said, Salomon Brothers has reduced the number of man-hours devoted to charge-back-related technical services from 180 hours per week to 40.

Users: We want LAN/WAN link

Vendors respond with products that can ease internetwork management

BY ELISABETH HORWITT
CW STAFF

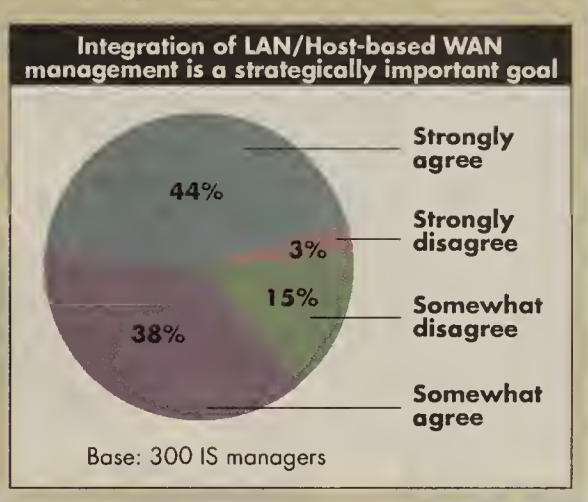
A bevy of network management vendors apparently got the same idea at about the same time: The one piece of the integrated network management pie users most want filled in right now is the local-area network/wide-area network connection.

Business Research Group recently did several studies that showed "users want management across different products on the same LAN offering, such as Novell, Inc.'s NetWare first and then management of LAN and WAN together," said Tom Wood, a senior analyst at the Newton, Mass., research firm.

"What they actually told us is, 'That's the order of priority, but we'll take anything right now.'"

Endorsement

Users are giving priority to integration of LANs and host-based WANs



Source: Business Research Group/Newton, Mass.

Improved connections

What users would like to get are products that let them perform all the key network management functions (performance monitoring and analysis, troubleshooting and capacity planning) across the bridges, routers and wiring hubs that handle LAN traffic, as well as across the WAN equipment and services that act as pipelines among sites.

Vendors have started responding in the following ways:

• **Make Systems, Inc.** recently introduced NetMaker, which is said to simulate and do capacity planning and performance analysis across long-distance LAN-to-LAN connections that involve both T1 multiplexers and bridges or routers.

• **Network General Corp.** announced Expert Sniffer Internetwork Analyzer, which is said to pinpoint LAN-to-LAN network bottlenecks and offer recommendations on how to resolve them.

• Meanwhile, **CrossComm Corp.** in Marlboro, Mass., is challenging Network General with a "Snifferlike" protocol analysis function for its Internetwork Management System Release 5.1.

Unlike Network General's Internetwork Analyzer, which must be installed at each router-to-router link it analyzes, Internetwork Management System can analyze traffic across remote connections by making use of a "Session Capture" feature built into CrossComm's ILAN Universal Routers, the vendor said. This feature is available only to CrossComm ILAN router users.

• **Comdisco Systems, Inc.** announced last week that it has added wide-area link and multiport router modules to the physical module library for its PlanNet software.

This means network managers can simulate LAN/WAN connections, loading in traffic analysis information to figure out how to resolve network bottlenecks or

Continued on page 78

Hippi routers to debut this month

Will allow lower speed networks to access resources on high-speed devices

BY JOANIE M. WEXLER
CW STAFF

BROOKLYN PARK, Minn. — Network Systems Corp. is preparing to become the first internetworking vendor to roll out a High-Performance Parallel Interface (Hippi) for its routers.

Hippi, an ANSI standard for an 800M bit/sec. channel link, will make its debut on the company's Data Exchange (DX) line at the Interop '92 Fall show at the end of this month.

The idea is to allow lower speed networks, such as 100M bit/sec. Fiber Distributed Data Interfaces (FDDI), to access resources on high-speed computers, disk arrays and storage devices, said Kevin Collins, product support manager for technical computing at Network Systems.

For example, the San Diego Supercomputing Center has several supercomputing applications that speak Hippi among computers, explained Jay Dombrowski, manager of network engineering. "Some nice applications live on these computers, but lower speed networks need a way to access them," he said.

Information sharing

The center is involved in an engineering and scientific application-sharing project called "Casa" to link with the California Institute of Technology, The Jet Propulsion Laboratory and the Los Alamos National Laboratory over a 2.4G bit/sec. Synchronous Optical Network (Sonet). The participants plan to use Network System's DX Hippi to enable it.

The supercomputing center uses FDDI as its main backbone, on which reside several high-performance Unix workstations that need to access a file server on the Hippi network, Dombrowski said.

Hippi is specified as a point-to-point, high-speed channel that sends 32-bit-wide data in parallel between two devices at distances of up to 10 km. Network Systems also markets a Hippi switch, called the PS32, with 16 ports on each side to allow computers with Hippi interfaces to mix and match which two computers link up.

Users can substitute an FDDI or Sonet interface for a Hippi port and allow multiple computers to link down to an FDDI or up to a Sonet network, Dombrowski explained.

Network Systems said its Hippi products for routers will be available immediately after its announcement for a cost of $24,500, which Dombrowski said he considers a hefty price.

"But we're only going to have one. And when you're the only game in town, you can charge what you want," he said.

Users: We want LAN/WAN link

CONTINUED FROM PAGE 77

reconfigure a network to get the most out of their networking budgets and devices.

While Make Systems concentrates on the inter-LAN connections, PlanNet meshes the internetworking simulation with a preexisting ability to simulate traffic within LANs, such as Fiber Distributed Data Interface and 10Base-T, Comdisco said. The modules are available now.

•Also last week, **Racal-Datacom, Inc.** announced integrated management across its line of modems, digital access devices, T1 multiplexers and internetworking devices. Support of the Simple Network Management Protocol (SNMP) gives the Racal Management System the ability to manage other vendors' SNMP-compatible internetworking devices.

The one area none of the above products tackles is the carrier link. Indeed, few products exist that can do real-time monitoring and troubleshooting across the whole LAN-to-WAN connection because there is no network management standard for both the LAN and WAN worlds.

> CUSTOMERS CAN use SNMP-based network management systems to trace traffic paths.

"The router vendors are going SNMP, while the carriers are going [Common Management Information Protocol]; the mux vendors are right in the middle, so they don't know which way to go," Wood said. MCI Communications Corp., however, recently stepped up to the plate with an SNMP-based management system that is said to collect and display service performance and monitoring information on demand, from MCI's Virtual Private Data Service frame-relay service.

As a result, customers can use SNMP-based network management systems to trace traffic paths and pinpoint problems across links that stretch from SNMP-compatible routers across MCI's frame-relay links to the router on the other side.

If MCI and other carriers follow this lead with SNMP-based management for other types of network services, users may finally be able to get complete information about what causes the bottlenecks and the glitches on their intersite data links.

Notes added to FT's Numeris

IDG NEWS SERVICE
EUROPEAN BUREAU

PARIS — France Telecom and Lotus Development Corp.'s French subsidiary recently announced a memorandum of understanding to offer services that incorporate Lotus' Notes groupware development tool and run over the carrier's Numeris integrated services digital network (ISDN).

The agreement marks the first time that a European carrier will incorporate Notes over ISDN, according to the companies.

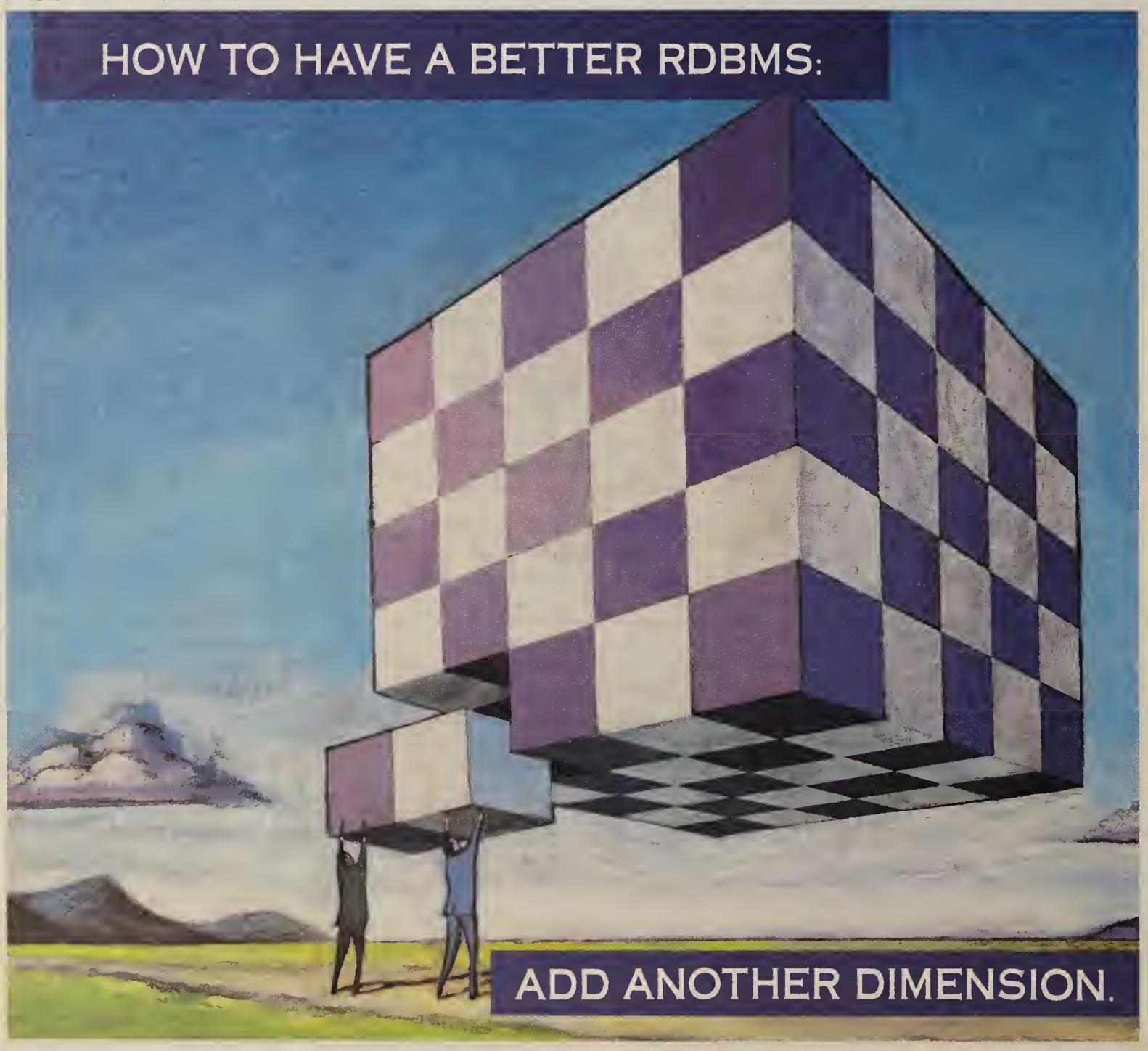
Postal Telephone and Telegraph (PTT) authorities in Scandinavia offer public electronic-mail services that use Lotus' CC:Mail E-mail software but not over ISDN, according to Mark Tompsett, Lotus business partner program manager at Lotus Development European Corp. in Stains, England.

Announced in 1990, Notes is Lotus' Windows-based software that was designed to let users build graphical applications for distributing data and coordinating workgroups over local- or wide-area networks.

At the recent Sicob 1992 trade fair here, France Telecom demonstrated two applications of Lotus' Notes on Numeris: a catalog of products with graphics from which users can order electronically and a database of customers, prospects and leads for commercial users.

Specific terms of the agreement have yet to be ironed out. However, applications such as those shown at Sicob are already available from France Telecom, according to the carrier.

The memorandum of understanding will also involve building Notes applications that will be integrated into France Telecom's Minitel videotex service and joint development of future products in areas such as voice integration.



There are a lot of relational data base management systems running on UNIX. Unfortunately, all have one thing in common: They were based on a mathematical premise, not a business premise.

But business needs to manipulate its data differently. Businesses require extra dimensions of flexibility and ease of use.

And only one RDBMS has those extra dimensions: uniVerse by VMark.

UniVerse is a relational database management system that literally redefines the meaning of relational. It gives users greater access to and control over the data they need to deal with.

But there's more to uniVerse than its database. As an application development and execution environment, uniVerse is by far the easiest to program and to operate of any open system environment. Ported to virtually every popular open system platform in the world, uniVerse allows you to "plug in" nearly 4,000 proven business solutions, making it possible for users to be up and running in hours, rather than months.

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IN BRIEF

HP opens telecom unit

■ With the European Economic Community getting ready to deregulate telecommunications markets in 1993, **Hewlett-Packard Co.** has set up a business group to chase the anticipated bonanza.

"You'll see a lot of turmoil in Europe in telecom, and it will be good for us to be in the middle of it," said Andre Meyer, who was named to head the new Telecommunications Systems Business Unit based in Grenoble, France, with operations also in Singapore and Sunnyvale, Calif. The unit is part of the Integrated Systems Division of HP's Computer Systems Organization.

■ **IBM** and **Premenos Corp.** have entered a strategic business partnership to develop an electronic data interchange (EDI) translator for the IBM RISC System/6000. The IBM Information Network now offers the translator, EDI/E, as a package for accessing its own expEDIte DataInterchange services.

■ Five companies have formed the Fax Response Industry Association to promote fax on demand, a computer application that allows users to call up and demand a particular fax by entering their requests on the telephone keypad. The companies are **Dialogic Corp.** in Parsippany, N.J., **FaxBack, Inc.** in Beaverton, Ore., **GammaLink** in Sunnyvale, Calif., **Ibex Technologies, Inc.** in Placerville, Calif., and **AudioFax** in Atlanta.

■ **Cabletron Systems, Inc.** has signed an agreement under which **Northern Telecom, Inc.** has become an authorized distributor of Cabletron hubs in Australia, Canada, Europe and the U.S. The products will complement Northern Telecom's line of twisted-pair and fiber-optic wiring products, the vendors reported.

■ **NetManage, Inc.** has launched Kanji Transmission Control Protocol/Internet Protocol for Windows, the first product the Cupertino, Calif., company has developed for the Japanese networking market.

■ The **International Communications Association** and **Comnet West** shows are combining into one conference that will be held in Dallas the week of May 17, 1993.

■ **Human Designed Systems** in King of Prussia, Pa., has cut prices of its X Window System terminal products by between 30% and 50%.

■ Two recently published books tackle different aspects of the problem of building networked systems. *Distributed Databases, Cooperative Processing, & Networking* (McGraw Hill, Inc.) by Shaku Atre covers technology, products and implementation strategies for companies setting out to put together distributed networked computing installations.

Mastering Internetworking (Numidia Press) by V. C. Marney-Petix is a "self-paced learning series" that covers internetworking devices such as bridges, repeaters, routers and network management systems.

■ **Unisys Corp.** has been awarded a three-year, $11 million facilities management contract to provide computer facilities and telecommunications services support to the **U.S. Department of Energy**'s Bonneville Power Administration (BPA) in Portland, Ore. Under the contract, Unisys' government support subsidiary will manage BPA's computer facilities and provide telecommunications support to its local- and wide-area network configurations. The deal builds on Unisys' contract with BPA, which provides for software development and maintenance services.

■ An alliance between systems integrator **HFSI** in McLean, Va., and **PaperFree Systems, Inc.**, a Washington, D.C., EDI applications supplier, aims at helping businesses set up EDI connections among applications on heterogeneous computer systems. The alliance will use PaperFree's EDI mapping tool, which translates between standard EDI formats, the partners said.

■ UK-based **Cray Electronics Holdings PLC** has acquired the Information Technology Division of **Dowty Group PLC** from **TI Group**, a UK-based aerospace firm that recently acquired Dowty. Dowty's information technology group includes Dowty Communications, which sells LAN/WAN networking equipment both in the U.S. and overseas.

■ **Southwestern Bell** has proposed Service Assurance Warranties that guarantee customers a service credit if the local exchange carrier does not install or repair a data line within the time period it has agreed on.

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Firms must do up-front EDI planning

Successful implementation demands cooperation among corporations, departments, personnel

BY ROBERT M. KNIGHT
SPECIAL TO CW

NASHVILLE — Victor Brungart said he was there when it happened. His client, a printer employing roughly 20 people, was told on Sept. 15 that it would have until Nov. 2 to comply with a chemical conglomerate's electronic data interchange (EDI) requirements if the printer ever hoped to do business with the giant again.

"My client has been doing 50%, maybe 60%, of its business with the chemical company," Brungart said at a recent meeting of the Electronic Data Interchange Association. "They knew nothing about EDI."

Brungart, director of the Small Business Development Center at Southwest Virginia Community College in Richlands, Va., said the printer suddenly found out that up-front costs could run as high as $20,000, counting travel expenses to the chemical company's headquarters.

Familiar problem

This is not an uncommon dilemma for a small supplier to a large company, according to EDI veterans attending the conference. The information systems manager should have been able to present executives with a full array of alternatives, complete with the up-front and long-term costs of each.

In addition, the printing company should have involved its marketing function in what is patently not an IS decision, these veterans said.

The more experience a company has with EDI, the more exacting its requirements from IS, according to Marcia Hollatz, OEM EDI program manager at the Home and Building Control Division of Honeywell, Inc. in Golden Valley, Minn.

> "YOU'VE GOT TO build a team for EDI—a permanent team, as opposed to resource people each department throws at you and you send back when the project is over."

"We need them to have a clear understanding of the business systems we have in place and their interdependencies," Hollatz said. She cited the order management system: "How does it tie in with production planning and scheduling and with financial systems? I'm very fortunate. Our IS people do everything they can for me."

Something as important as EDI requires the absolute cooperation of all departments affected by a company's relationships with other companies, customers and suppliers, she said. That includes virtually every department.

"You've got to build a team for EDI — a permanent team, as opposed to resource people each department throws at you and you send back when the project is over," Hollatz said. "There's not a lot of EDI expertise out there, so you can't start each transaction with a new team. The learning curve's too long."

For initial end-to-end communications, the learning curve might not have to be so long.

The interconnections that occur when one company wants to shorten the cycle of orders, acknowledgements and delivery of goods can be complex, according to International Data Corp. in Framingham, Mass.

But a basic communications hookup, designed simply to eliminate data entry and paperwork, still involves EDI software.

Most often it includes translation software from vendors such as GE Information Services in Rockville, Md.; IBM Information Network in Tampa, Fla.; Premenos Corp. in Concord, Calif.; Sterling Software, Inc. in Dublin, Ohio; or TSI International in Wilton, Conn.

The hookup needs data transport or network services, usually in the form of a value-added network.

For such a communications-only gateway, TSI announced a series of "kits" at the conference. They were designed around the particular requirements of each of the roughly 35 large companies.

The Wal-Mart Kit, for example, interacts with TSI's translation software residing on the trading partner's personal computer, so the end user need not learn the transaction sets and other idiosyncracies that retailer Wal-Mart Stores, Inc. might require.

The use of a kit might diminish demands on the IS department by simplifying communications hookups and integrating data with mainframe-based applications.

Betsy Smith, deputy director at the U.S. Defense Personnel Support Center (DPSC) in Philadelphia, said her requirements are more complex. For example, her department works with more than 250 trading partners supplying food, clothing, textiles and medical supplies to the nation's armed services.

In addition, DPSC has reached the level of EDI sophistication in which the link is not just for communication but for the integration of computer systems between the agency and each trading partner.

"A lot of programming has to be done just for the integration of systems," Smith said. "We have to depend on IS not only to purchase and install translation software, but to ensure that each new release of the software is installed for X12 [the de facto umbrella standard for EDI] and UCS standards [tailored to the retail industry]."

DPSC processed 12.8 billion orders in the year ended July 1991. Those orders totaled an estimated $3.9 billion, she said.

Ben Milbrandt, a systems analyst at Consolidated Freightways in Portland, Ore., which boasts 6,000 trading partners, noted, "The biggest thing we need from IS is a system that will provide information from the application that is easily tailored to the customer's needs.

"On a freight invoice, there are lots of numbers, and customers should be able to pick out what numbers they want. We each have a 'magic number' — it might be a purchase order number or a bill of lading number — and it's up to IS to make sure that there's an accurate match between their magic number and ours, so the order can be processed correctly," Milbrandt said.

Knight is a Chicago-based writer.

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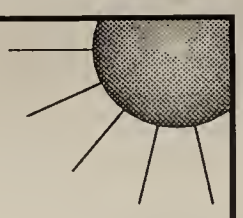

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NEW PRODUCTS

Network management

NCR Corp. has introduced Version 3.5 of StarSentry Systems Manager network management software.

According to the company, the product was designed to give users control of networks consisting of multivendor devices.

Features include Discovery, which checks the networks periodically for new systems and inactive old systems, and alarm forwarding, which enables users to monitor and maintain networks with a full-featured management station.

StarSentry Systems Manager has an SQL database interface and a management gateway that offers wide-area access for managing resources on remote local-area networks.

StarSentry Systems Manager 3.5 costs $15,000.

NCR
1700 S. Patterson Blvd.
Dayton, Ohio 45479
(513) 445-2078

Hewlett-Packard Co. has announced enhanced versions of HP OmniBack, a network backup management system, and HP OpenSpool, a print management system.

The products were designed for Sun Microsystems, Inc. workstations. HP OmniBack products support SPARCstations running Versions 4.1.1 or 4.1.2 of Sun's operating system. The software enables users to perform central file system backup and the recovery of their Sun workstations over a network to an HP Apollo Domain or HP/UX-based system, the company reported.

With HP OpenSpool, shared printers and plotters can be accessed transparently across networks of HP/UX-based workstations, Sun SPARCstations and multiuser systems.

Prices start at $400.

HP
19091 Prune Ridge Ave.
Cupertino, Calif. 95014
(408) 725-8900

General Software, Inc. has introduced the EtherProbe Network Analyzer.

The product was designed for Novell, Inc. NetWare and Microsoft Corp. LAN Manager networks. The company said the product is bilingual and has the ability to decode multiple protocols simultaneously in real time.

The software included with EtherProbe installs directly onto any DOS-based personal computer, either AT- or 386/486-based. Protocol support is provided with Microsoft LAN Manager protocols, IBM LAN Server protocols and Novell NetWare 286 and NetWare 386 file-sharing protocols.

The EtherProbe costs $995.

General Software
Suite A3
15600 N.E. 8th St.
Bellevue, Wash. 98008
(206) 391-4285

Gateways, bridges, routers

Cisco Systems, Inc. has introduced the Cisco Multiport Token Ring Card.

According to the company, the product is a four-port Token Ring interface card designed for Cisco Systems' AGS+ router/bridge. Users can build large distributed Token Ring internetworks with up to 16 Token Ring local-area networks.

Support is provided for all Cisco IBM internetworking features such as Synchronous Data Link Control to Token Ring media, translational and source-route transparent bridging between Token Ring and Ethernets and local termination of Token Ring sessions.

The Cisco Multiport Token Ring card costs $9,500 for a two-port configuration and $15,000 for a four-port configuration.

Cisco Systems
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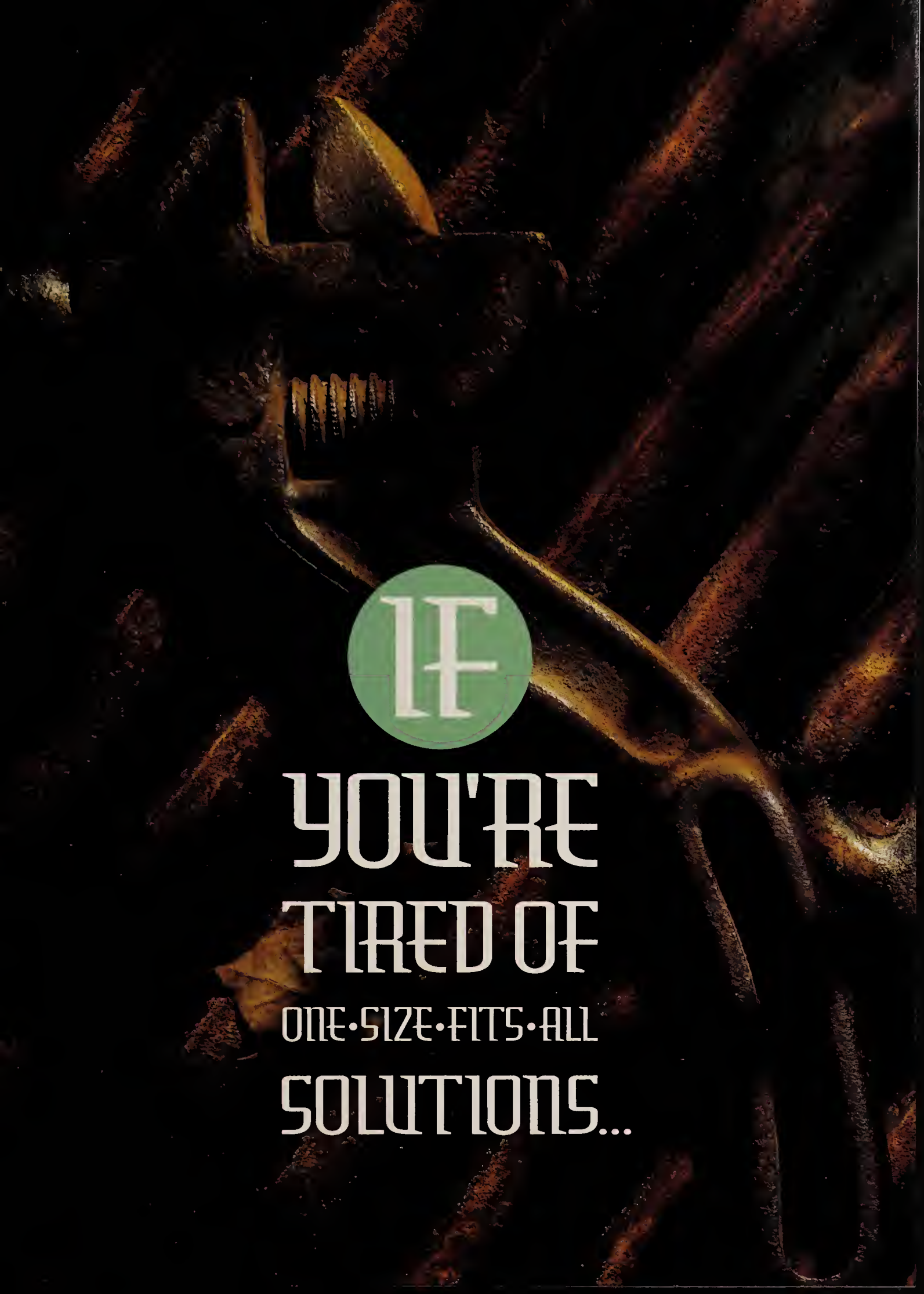
(415) 326-1941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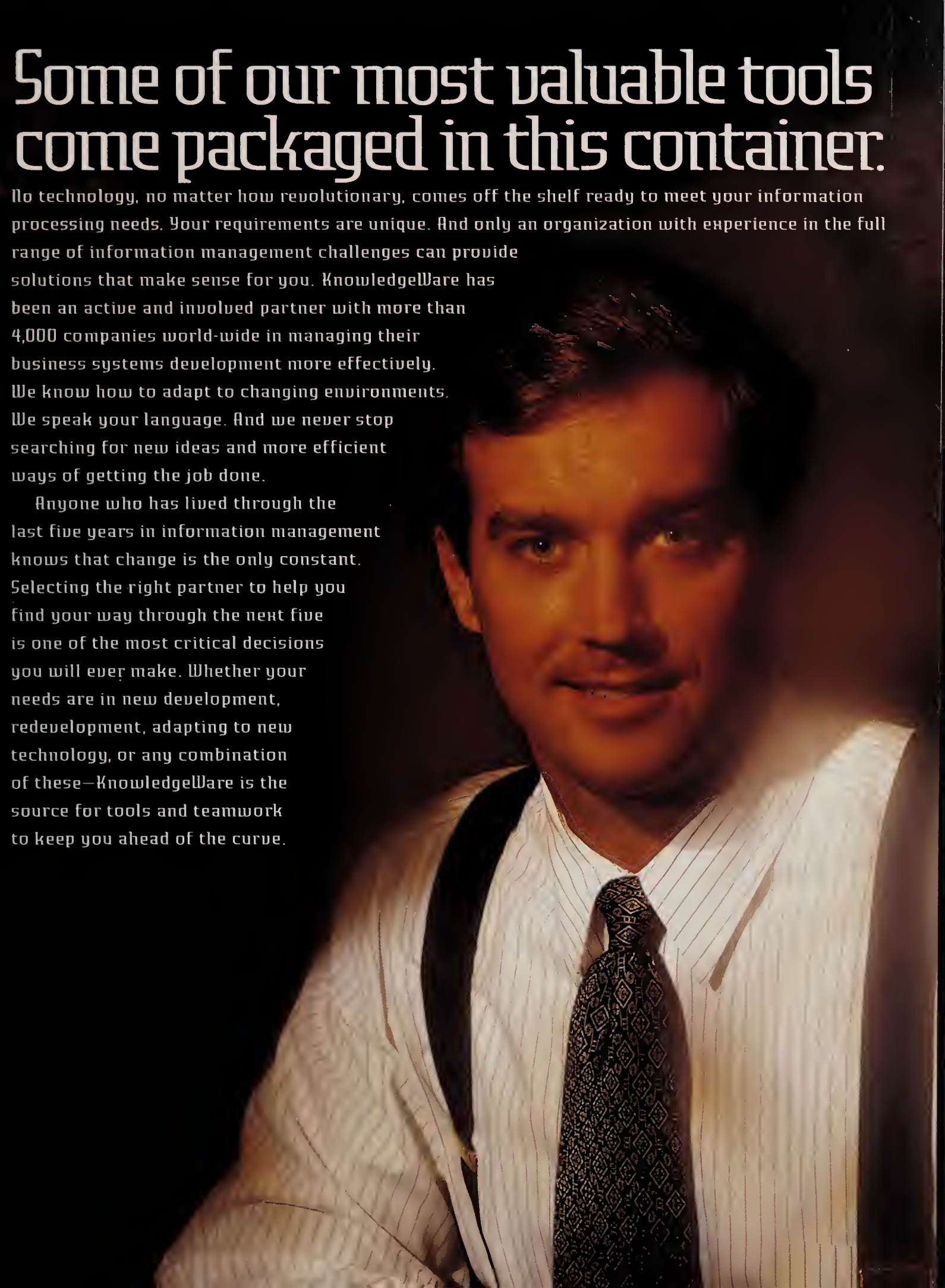

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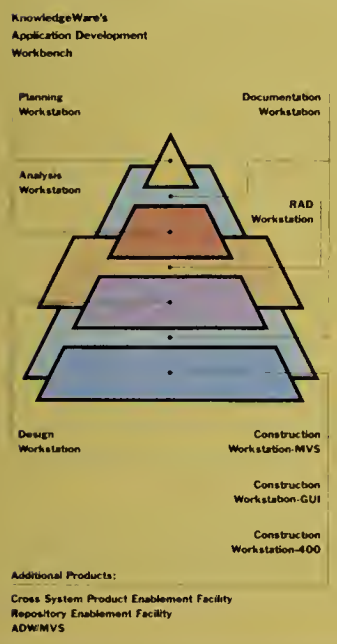

The superbly flexible ADW® tool set covers the full lifecycle of application development from planning through code generation. ADW empowers your development team to generate mainframe-, midrange-, and PC-based applications using common design logic. Applications driven by your business requirements, not technical issues. Applications that can quickly and easily adapt as your needs change.

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One of the most complex technological challenges facing information management professionals today is client/server processing. The advantages of this technology are obvious. Not only does client/server optimize your company's hardware investment, it also promises fantastic improvements in user productivity and accuracy.

But the technical problems in application development remain formidable. Development can involve unacceptably long lead times. And the costs involved in hiring or training

Application development for multiple target platforms.

developers to deal with this complex technology can be astronomical.

KnowledgeWare is ideally positioned to help you realize the full potential of this important, but complex new technology. We not only offer key products to help you, but back them with consulting services, training and support to ensure your success.

Our ADW/Construction Workstation-GUI delivers all the benefits of integrated CASE development to client/server applications. Equally important, CWS-GUI can ease the pain of transition by allowing your developers to work in a familiar context as they create applications for this new environment.

Many of the user productivity advantages of client/server processing can be achieved without abandoning your existing mainframe applications if you use KnowledgeWare's Flashpoint.™ Flashpoint allows you to construct graphical user interfaces for your current COBOL programs in days, with a minimum commitment of programming resources.

The transition to a client/server environment isn't easy. But KnowledgeWare's unique combination of products and expertise can make it possible. And you can do it within budget and staffing constraints.

It no longer matters whether application developers want to deal with a mix of hardware environments. Whether the cause is right-sizing, a merger, an acquisition or business reorganization, multiple hardware platforms are a fact of life. The only question is, can you build applications with the flexibility to be deployed on all your current, and possible future, target environments?

You can if you include KnowledgeWare in your business plan. Our Application Development Workbench has grown to lead the market through the strength of its planning, analysis, design and code generation components for a full range of target platforms. And we will soon be adding Ada and UNIX® support.

Because high-level design information is captured and retained in our encyclopedia, it is reusable. Whether you are targeting mainframes, midrange computers or PCs, you can develop applications quickly and change them efficiently as your needs change.

No one denies the importance of maintaining and enhancing existing systems. They represent an enormous investment of time and money. And remain critical to the operation of most companies. But many IS departments devote so much talent and time to maintenance that they are unable to schedule and staff new application development.

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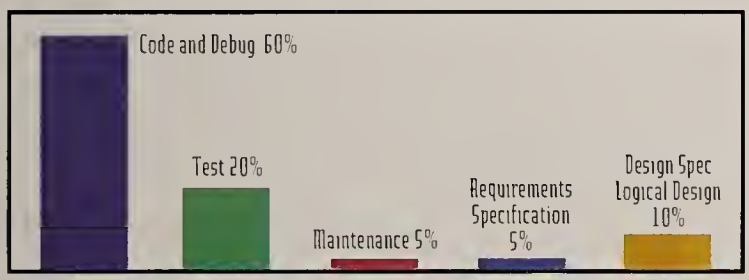
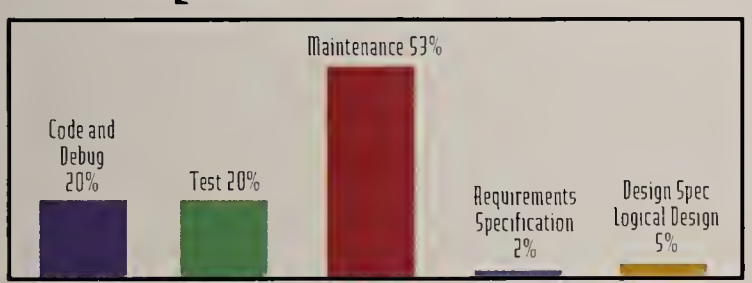


How developers actually spend their time.



Source: Pittiglio Rabin Todd & McGrath, management/ consultants, **Electronic Business,** June 1992

ADW/Pinpoint documents the code, charts processing paths, and highlights potential trouble spots. And ADW/Recoder dramatically improves program quality by automatically restructuring problem code.

Many IS departments are also being asked for state-of-the-art user interfaces. KnowledgeWare's Flashpoint allows you to add graphical user interfaces to existing COBOL applications. Quickly and easily. This Windows™-based development tool makes your existing inventory of mainframe and midrange programs more accessible to users and much more efficient. Flashpoint is an excellent step toward client/server technology.

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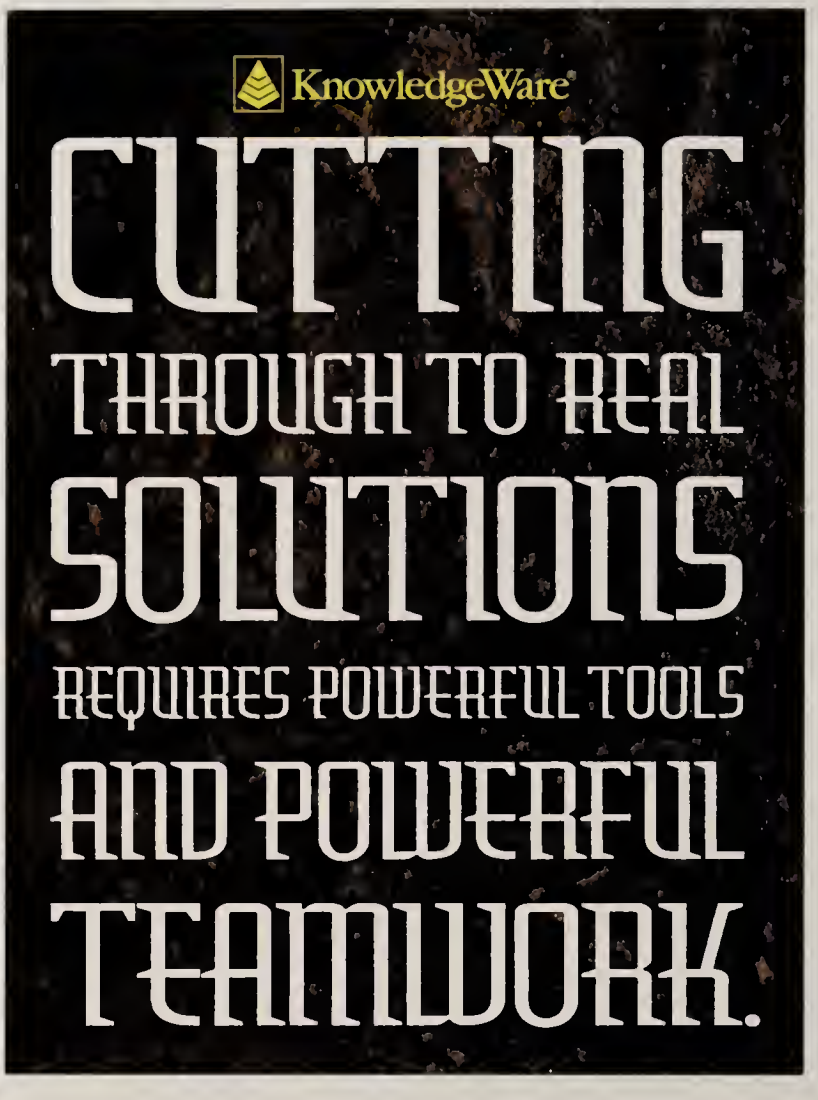

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Users await 'official' launch of Alpha

If DEC can find new markets, technology may put firm back on its feet

BY MELINDA-CAROL BALLOU
CW STAFF

Some users are eagerly awaiting the Alpha workstations and servers that Digital Equipment Corp. is expected to officially introduce next month, while others will "wait and see."

But, according to Forrester Research, Inc. senior analyst Bill Bluestein, merely introducing the Alpha platforms will not be enough to guarantee revitalization for DEC. The company, which last week reported a $260 million quarterly loss, needs not only to facilitate the transition to Alpha successfully but must also find new markets.

Demonstrated at DECworld last spring but yet to be officially unveiled by the company are five platforms ranging from the low to the high end. DEC's earlier Alpha-ready machines covered a similar span [CW, June 15].

Mixed anticipation

Some users contacted last week said they can hardly wait for the machines to be delivered.

Robert Ayr, data center manager at Pacificare Health Systems, a health maintenance organization based in Cypress, Calif., said he is eager for the added CPU power of the 64-bit systems, which DEC has said it will deliver shortly.

The majority of DEC's installed VMS base will at least initially forbear switching, however, according to Steve Widen, an analyst at WorkGroup Technologies, Inc., a market research firm based in Hampton, N.H.

For example, David Tanimoto, a programmer at Lockheed Missiles and Space Co. in Sunnyvale, Calif., said his colleagues will investigate the new systems but will wait before switching architectures.

Expected to be included in the announcement are a desktop workstation that will exceed 100 SPECmarks and offer 16M to 128M bytes of memory and a graphics deskside workstation that will exceed 125 SPECmarks for upgrading from the VAX 4000 60 series. The products are code-named Sandpiper and Flamingo, respectively.

DEC officials said pricing is not yet fixed for the platforms, but it will be "competitive." They refused to comment on system details.

Two servers, code-named Cobra and Ruby, are also expected to be announced. Cobra, a departmental machine, is expected to offer one or two processors with approximately 135 SPECmarks per processor and 2G bytes of memory for upgrading from the VAX 4000 series. Ruby, a data center machine, is expected to offer up to four CPUs and 14G bytes of memory for upgrading from the VAX 6000 and 7000 series, sources said.

DEC will also announce the 10000 Alpha mainframe with up to 48G bytes of storage.

Analysts said it is high time that DEC came out with the platforms, and the company must ramp up manufacturing and delivery quickly if it is to have any impact on the market.

> "THEY UNDERSTAND THE stakes and that they have to make this work quickly because the company depends on it."
>
> JUDITH HURWITZ
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High stakes

"My understanding is that they will announce aggressive delivery schedules. They understand the stakes and that they have to make this work quickly because the company depends on it," said Judith Hurwitz, president of Hurwitz Consulting Group, a market research firm in Newton, Mass.

Signaling DEC's push into the personal computer arena, a PC local-area network server and a low-end Alpha PC are well under way, according to sources.

Although DEC will not be able to ship the PCs until Microsoft Corp. ships Windows New Technology (probably not until late in 1993), analysts said the ramp-up of the Alpha systems could benefit the company in a variety of ways.

AS/400 switch helps laundry chain clean up

BY KIM S. NASH
CW STAFF

PHILADELPHIA — Dirty laundry is a nice business for Solon Automated Services, Inc.

The $105.3 million, employee-owned firm runs coin-operated laundry services in 13,100 U.S. apartment buildings, dormitories and military bases.

However, new building construction has stagnated during a poor economy, so the need for new laundry rooms is mighty slim.

Swapping 5-year-old IBM System/36 minicomputers for an Application System/400 Model B50 has enabled Solon to find ways to attract new business and keep customers squeaky clean and smiling.

"The new system gives us some interesting competitive advantages," including more accurate accounting and faster response to machine breakdowns, said Jim McDonnell, vice president of information systems and human resources. The B50 replaced 12 remote System/36 models.

Some $398,000 was spent on initial hardware, software and development costs, along with $72,000 for maintenance fees for leased lines and $90,000 per year for lease of the AS/400. Still, Solon expects to save at least $200,000 per year as a result of the new setup.

Layoffs expected

A good portion of that surplus will come from eliminating several IS positions in remote locales, McDonnell said.

With most processing now centralized on the AS/400, "we're not going to need all 12 system coordinators at our regional sites, so we'll lay off some or redeploy part of their time," McDonnell explained.

Among the competitive legs-up that McDonnell cited was the fact that Solon has virtually eliminated accounting data errors with a bar-coding system that tracks the number of quarters taken in by each washer and drier. Previously, money in each of the machines was counted manually and then deposited at a local bank.

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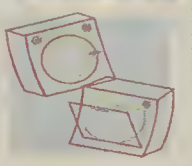
ON SITE

Solon Automated Services
Philadelphia



- **Challenge:** To replace old IBM System/36s, centralize data for better control and allow wider remote access.
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- **Results:** Reduced data error rate; company plans to cut IS staff and save money on salaries and hardware maintenance.

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EcoSystems tools take network pulse

Unix-based system monitors track client/server network performance statistics, response time

BY JEAN S. BOZMAN
CW STAFF

CUPERTINO, Calif. — Client/server systems depend on the condition of the network that separates the two cooperating computers. A Silicon Valley start-up firm has built system monitors that will take the "temperature" of such network connections of database servers — and alert users to breakdowns or slowdowns that require human intervention.

EcoSystems Software, Inc. recently introduced its EcoSphere systems management software and EcoTools administrative management software.

The two software packages, which run on Oracle Corp. relational database management system servers, as well as on personal computers and workstation "clients," are priced from $6,000 for an eight-user system. Additional server packages are $2,000 each.

The 2-year-old firm, staffed by former Hewlett-Packard Co. and Oracle managers, expects to port its Unix server software to most major RDBMSs. The intent is to help end users tune their business-unit RDBMS servers for efficiency.

Missing link

"The whole premise of client/server computing is that you didn't need an IS department," explained John Howorth, EcoSystems' marketing vice president. "But while users had software to manage their systems and their network, the administrative functions were missing."

EcoSystems' software creates hundreds of software "agents" that check on various system parameters and report back to a central console.

Users can view statistics about server I/O, memory use, response time and other indicators of performance. Consoles must be programmed when installed, Howorth said, but end users can operate them in daily use.

Some industry analysts said they believe the small firm has an early entry into an emerging market.

Without such tools, users are left to puzzle why memory is being used too quickly or why response time is slowing in a healthy local-area network.

"They've built a proxy agent that tracks database performance and puts it in a neutral format their management console can understand," said John Rymer, a vice president at the Patricia Seybold Group in Boston. "Until you have statistics about how a database is being used by an application, you don't have a complete picture."

AS/400 helps laundry chain clean up

CONTINUED FROM PAGE 83

Deposit slips and other records were then reconciled at the regional offices. Any errors were combed through and corrected by hand.

Now each machine has a bar-coded card associated with it that is scanned at the regional office, which automatically enters the data in the AS/400 at headquarters. The bar code pinpoints exactly how much money specific machines collect each day.

Skirting several manual steps has cut down on errors. The method "may or may not be faster than the old way, but better accuracy is what we want," McDonnell said.

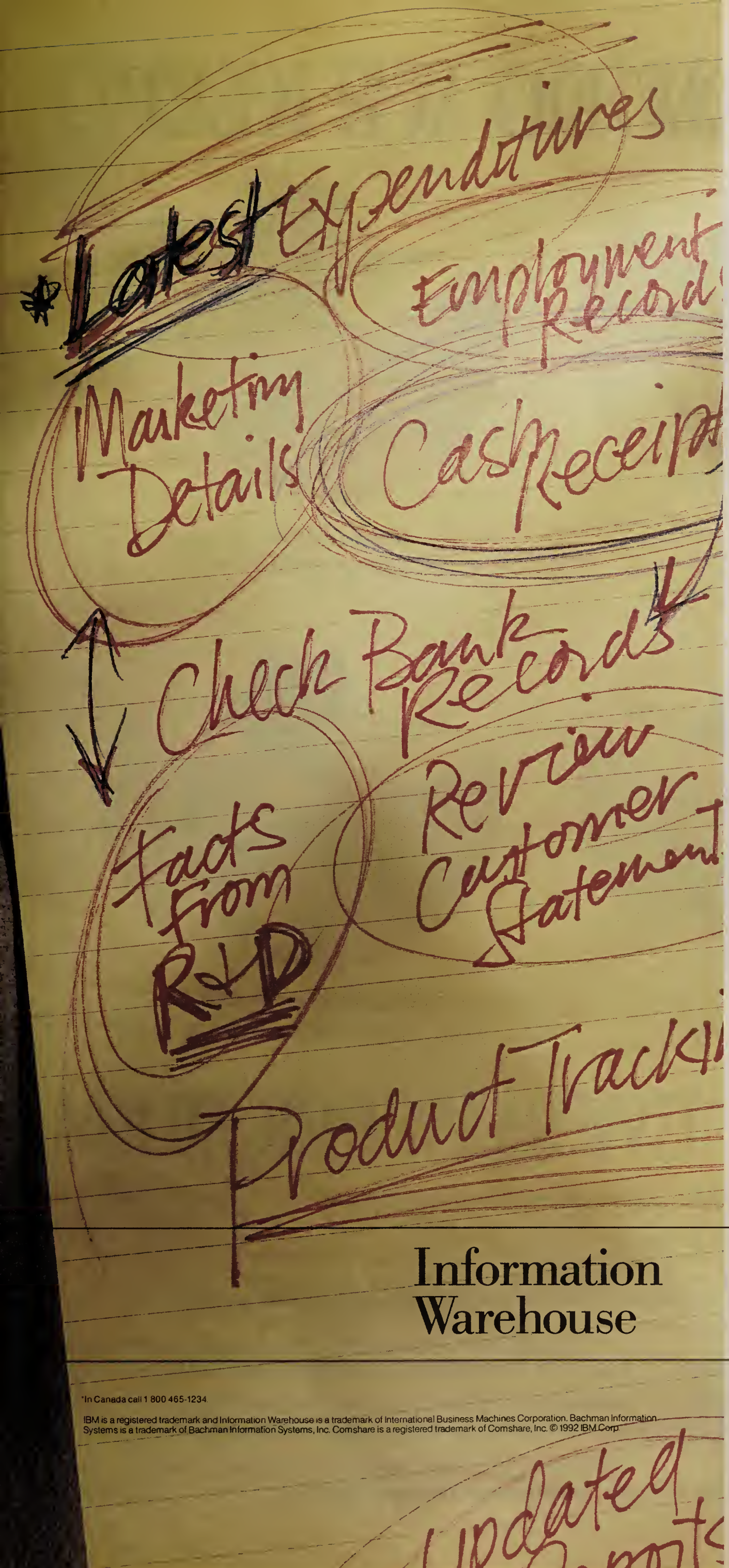
A preventive maintenance program is in the works that he said he hopes will set Solon apart form rivals. By monitoring the frequency of broken washers and driers and measuring those averages against data compiled on typical usage in that area, Solon can better plan machine checkups and, with a bit of luck, avert breakdowns.

So far so good

To determine which AS/400 was most appropriate, Solon used a product from IBM that analyzes operations. McDonnell said he is happy with the recommended B50 so far, but he will likely buy a larger processor after next year as more users and data are added to the system.

This month, Solon will throw the switch on what will grow into a network of a dozen IBM personal computers linked via leased lines from MCI Communications, Inc. to an AS/400 Model B50 at headquarters.

Aside from a couple of "minor" problems, setting up the AS/400-centered network was trouble-free, according to Bob Page, director of MIS projects. For example, a cabling problem with a modem jumbled and sometimes prevented transmission of data. IBM field service jumped in, isolated the problem and suggested a fix. "IBM gave us a lot of assistance. Their communications people were great," Page said.



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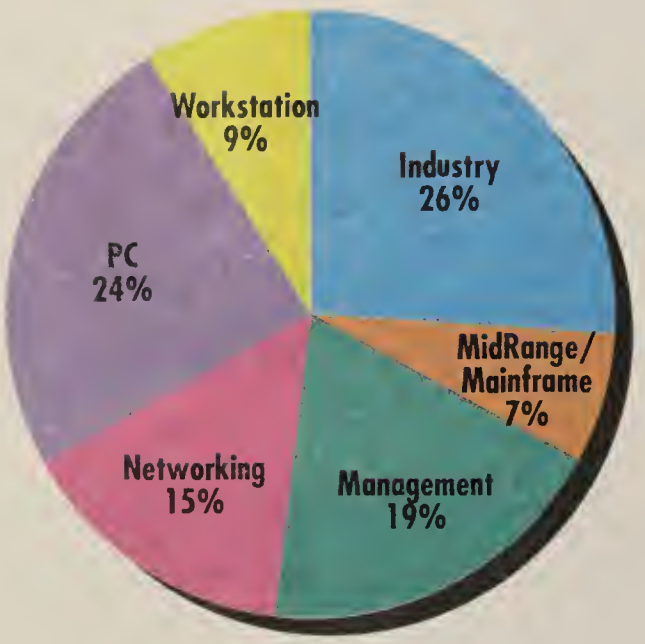

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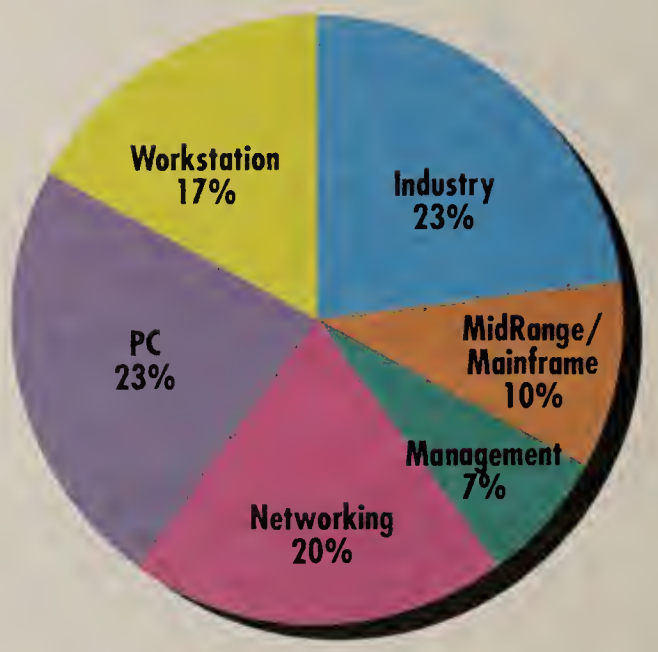

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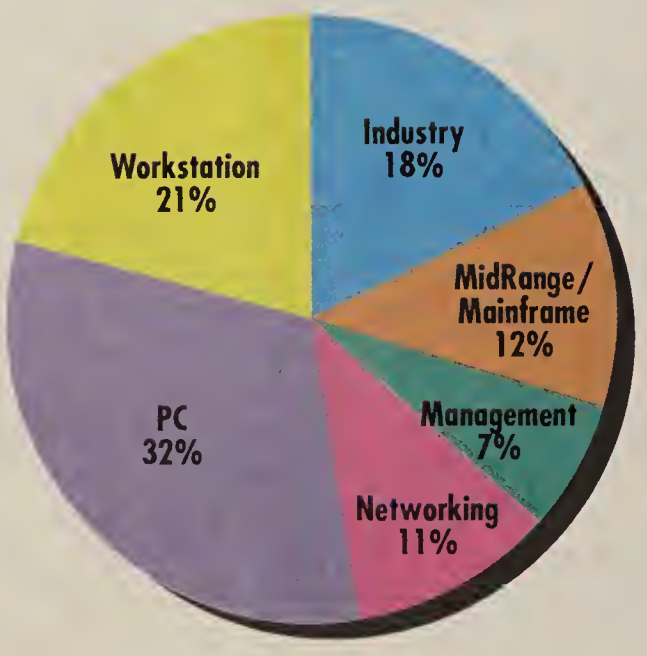

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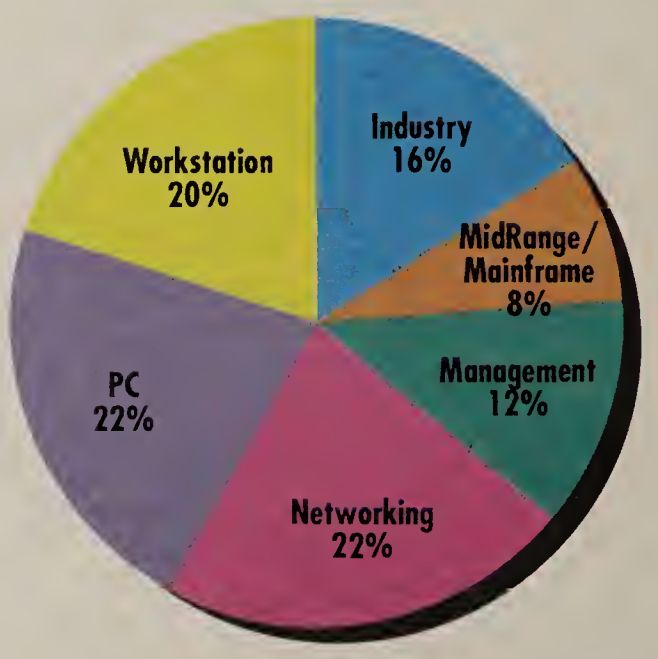

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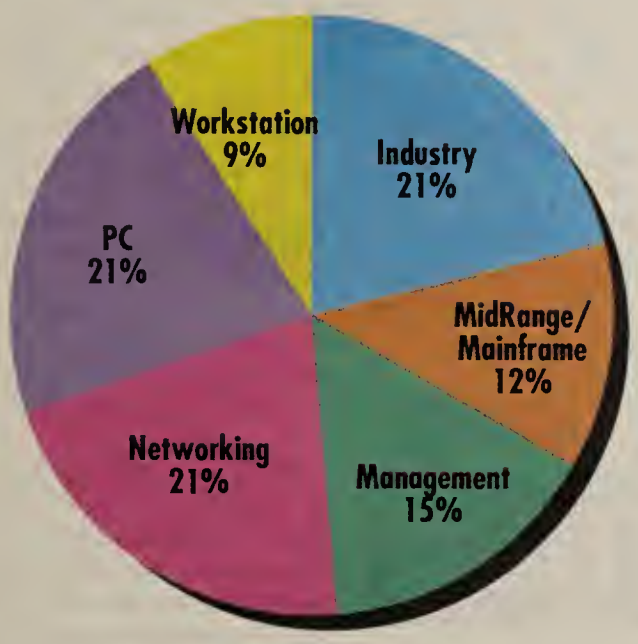

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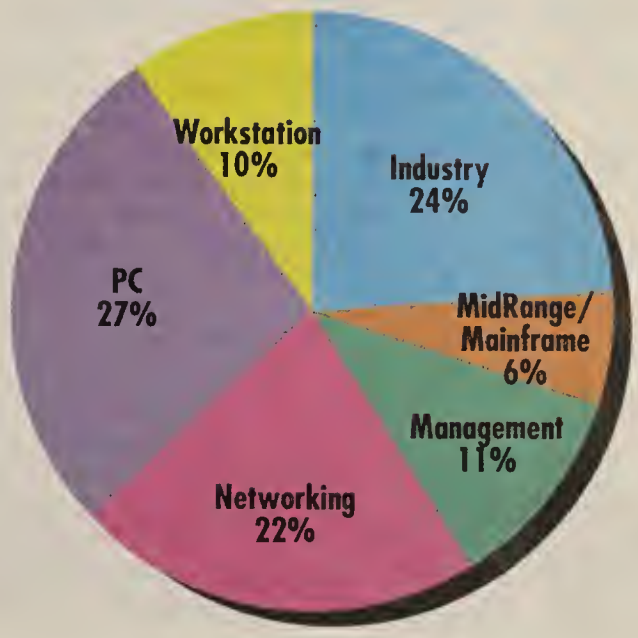

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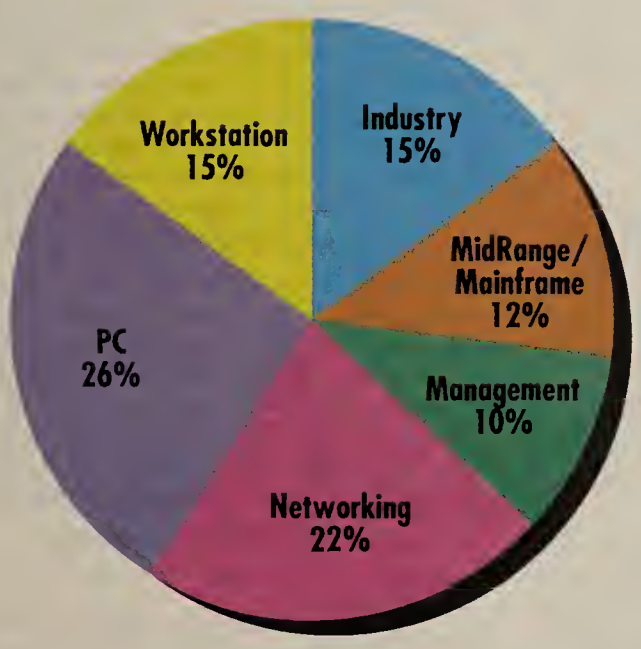

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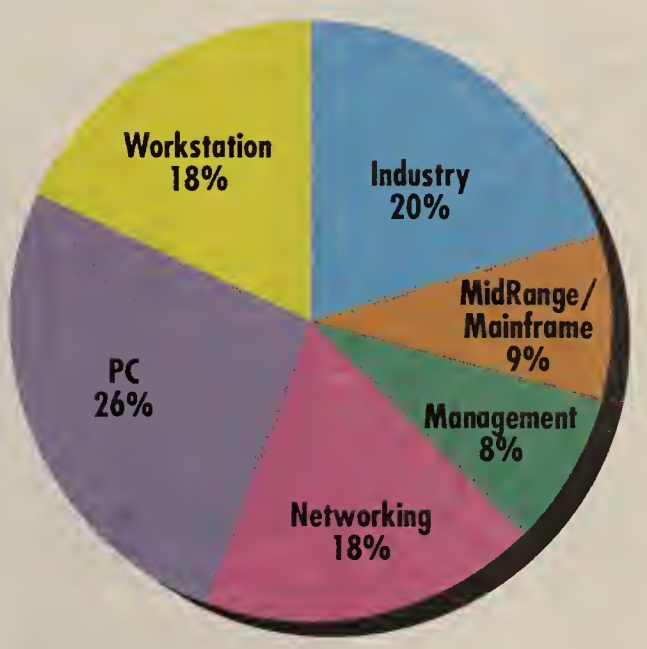

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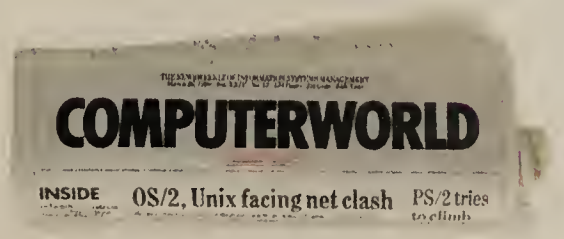

The Newspaper of IS

Amoco Canada chooses SHL Systemhouse as outsourcer

Mainframe lease expirations provide opportunity for saving

BY JOANIE M. WEXLER
CW STAFF

CALGARY, Alberta — Spurred by a corporatewide mandate to reduce budgets by 30% to 40%, Amoco Canada Petroleum Co.'s information systems group this month teamed with Ottawa-based SHL Systemhouse, Inc. on a five-year data processing and network operations outsourcing project, the company said.

The $70 million to $90 million deal resulted in part because the leases on Amoco's three mainframes — an IBM 3090-400S and 300J and a Hitachi Data Systems Corp. EX90 — are expiring at the end of this year, affording the company "a window of downsizing opportunity," said Wayne Bester, manager of IS.

The $4 billion oil and gas producer is targeting a 15% to 20% reduction in data center operations alone, Bester said. The network side of the contract calls for SHL Systemhouse — which recruited a large number of Amoco's network-savvy IS staff — to manage, plan and support the company's local- and wide-area network operations.

Amoco also considered Electronic Data Systems Corp. and parent company Amoco Corp. for the outsourcer role. The project has three main goals underlying the cost-savings theme, Bester said:

•To gain the flexibility to decrease financial commitments over time as mainframe use diminishes. Amoco's current 210 million instructions per second (MIPS) will drop to 120 MIPS next year and is expected to fall between 60 MIPS and 80 MIPS within five years, Bester said.

•To provide a career path for Amoco IS staff members by moving them over to SHL Systemhouse, which will leverage their expertise to provide services to other customers.

•To allow Amoco's computing infrastructure to be designed and managed as a single entity by outsourcing both the data center and network operations to one outfit.

While no network savings are targeted for the first contract year, a major network project will be for SHL Systemhouse to lead Amoco into usage-based network pricing "so that departments are aware of exactly what their costs are to get their processing done," said Bill Trafford, president of computer services at SHL Systemhouse. Usually, he said, companies take the total cost and divide it evenly among users.

"With each department getting its own bill and paying in real money, users can look for networking alternatives and understand the financial implications" of their decisions, he explained.

About 95 of Amoco's 130-person IS staff transferred to SHL Systemhouse; 23 people remained in the central IS department to manage the contract and provide planning, Bester explained. The remainder were terminated or left voluntarily.

> AS ONE MAJOR project, SHL Systemhouse will lead Amoco into usage-based network pricing.

"With an increased pressure to decrease our data center budget, there wasn't much of a career path left for our people," Bester explained.

Bester's own job has evolved into a type of corporate "IS ambassador" to Amoco's business units, with whom he meets and helps set technology directions for the entire company. To that end, he also chairs a corporatewide technology management committee.

The business units are moving to client/server technology "because we believe it will be cheaper over time," he said.

Evidence of Amoco's downsizing exists in the company's attitude toward more mature platforms.

For example, Amoco believes there is a role for midrange systems, such as its Digital Equipment Corp. VAXs and IBM Application System/400s, "but we're doing no more development on them." Amoco will run only off-the-shelf applications for those platforms, Bester said.

The company is also moving its messaging systems from IBM's mainframe-based Professional Office System to LANs.

While he expects cost savings with the downsizing, Bester said he also expects surprises. "I don't think we fully appreciate or understand how we're going to manage distributed data on multiple servers all over the country," he acknowledged.

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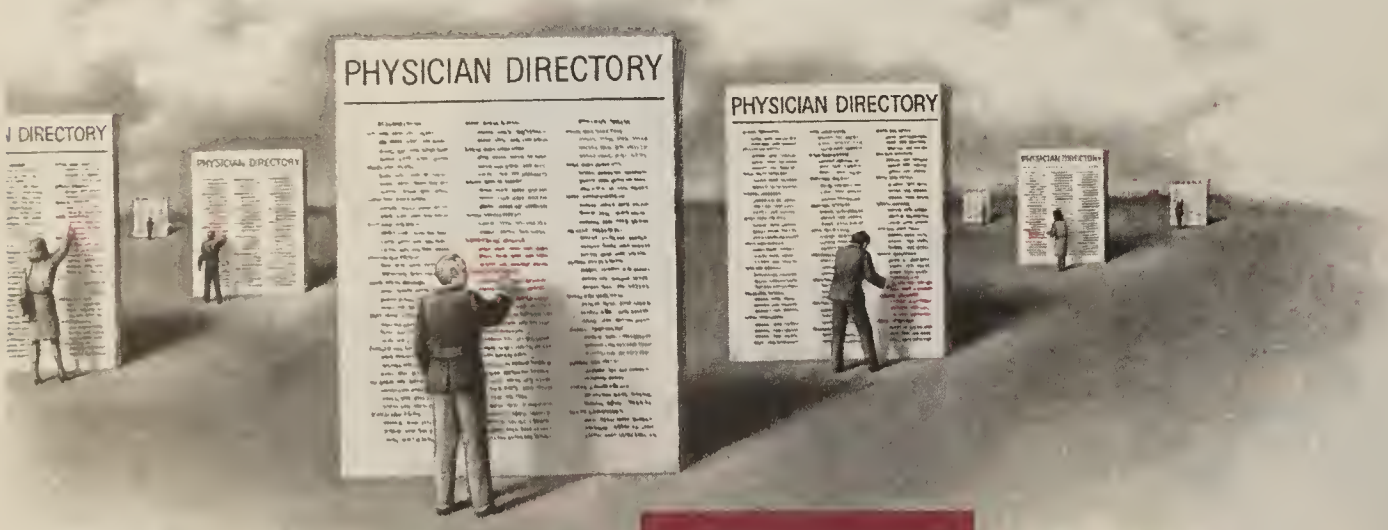

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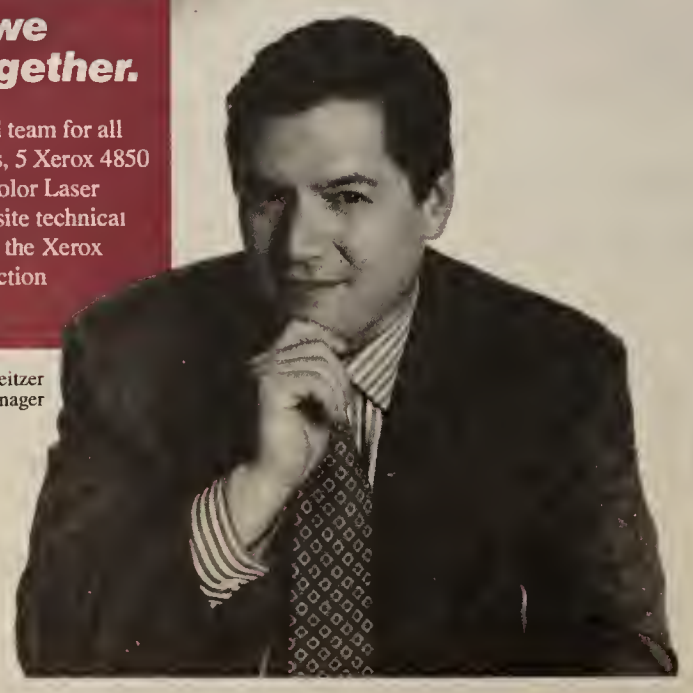

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PA-RISC group licenses tools

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — The consortium that promotes development around Hewlett-Packard Co.'s Precision Architecture-RISC has turned to a rival group to help it achieve shrink-wrapped compatibility among PA-RISC platforms.

The Precision RISC Organization (PRO) said it has licensed compatibility testing tools from the 88open Consortium Ltd. Neither party revealed financial terms of the accord, through which PRO will make the tools available to its hardware and software members. 88open backs Motorola, Inc.'s 88000 family of reduced instruction set computing (RISC) microprocessors and has used the suite to test compatibility among 88000 systems.

For users, the accord will help assure that software written for one PA-RISC machine will run on other PA-RISC platforms, said Jim Bill, president of PRO.

Although the PA-RISC hardware world consists overwhelmingly of HP-brand workstations and minicomputers, more brands are expected to emerge in the marketplace over the next year.

PA-RISC licensees Sequoia Systems, Inc. and Stratus Computer, Inc., for instance, both plan to introduce PA-RISC versions of their high-availability systems.

Bill said the test suite is intended to assure compatibility from the ground up before the new machines hit the market. "It's much easier to design in compatibility than to retrofit it," Bill said.

Shrink-wrapped compatibility across brands of the same RISC platform has been an elusive goal for some vendors of RISC and its companion multiflavored operating system, Unix. For example, vendors in the Sun Microsystems, Inc. Scalable Processor Architecture (SPARC) RISC camp have fallen short in achieving compatibility, Bill observed.

"I don't think you have to make too many inquiries in the SPARC community to find out that you don't have complete compatibility," he said.

Bill said the PRO test suite will check for compatibility with a single Application Binary Interface (ABI). That ABI will be based largely on the ABI in HP's installed base and will eventually include support for functions such as multiprocessing and kanji character recognition, he said.

PRO is licensing 88open's AVS/88 system for testing hardware and operating systems and its ACT/88 for testing applications.

Tom Mace, president of 88open, said the move is not indicative of any intentions to cede market share to PA-RISC, although he acknowledged that some 88open software vendors may add PA-RISC support.

IN BRIEF

Firms join tools, DBMS

■ **Cincom Systems, Inc.** and **Intelligent Environments, Inc.** in Tewksbury, Mass., announced that they are integrating Cincom's Supra, a mainframe relational database management system, with Intelligent Environments' client/server development tools.

■ **Baltimore Bancorp** said it will outsource its data processing, resulting in the elimination of 50 to 90 jobs. David Spilman, treasurer of the bank holding company, said an outsourcing vendor had been selected from a field of eight companies, but he would not name the winning firm. He said the contract will kick in toward the end of the year.

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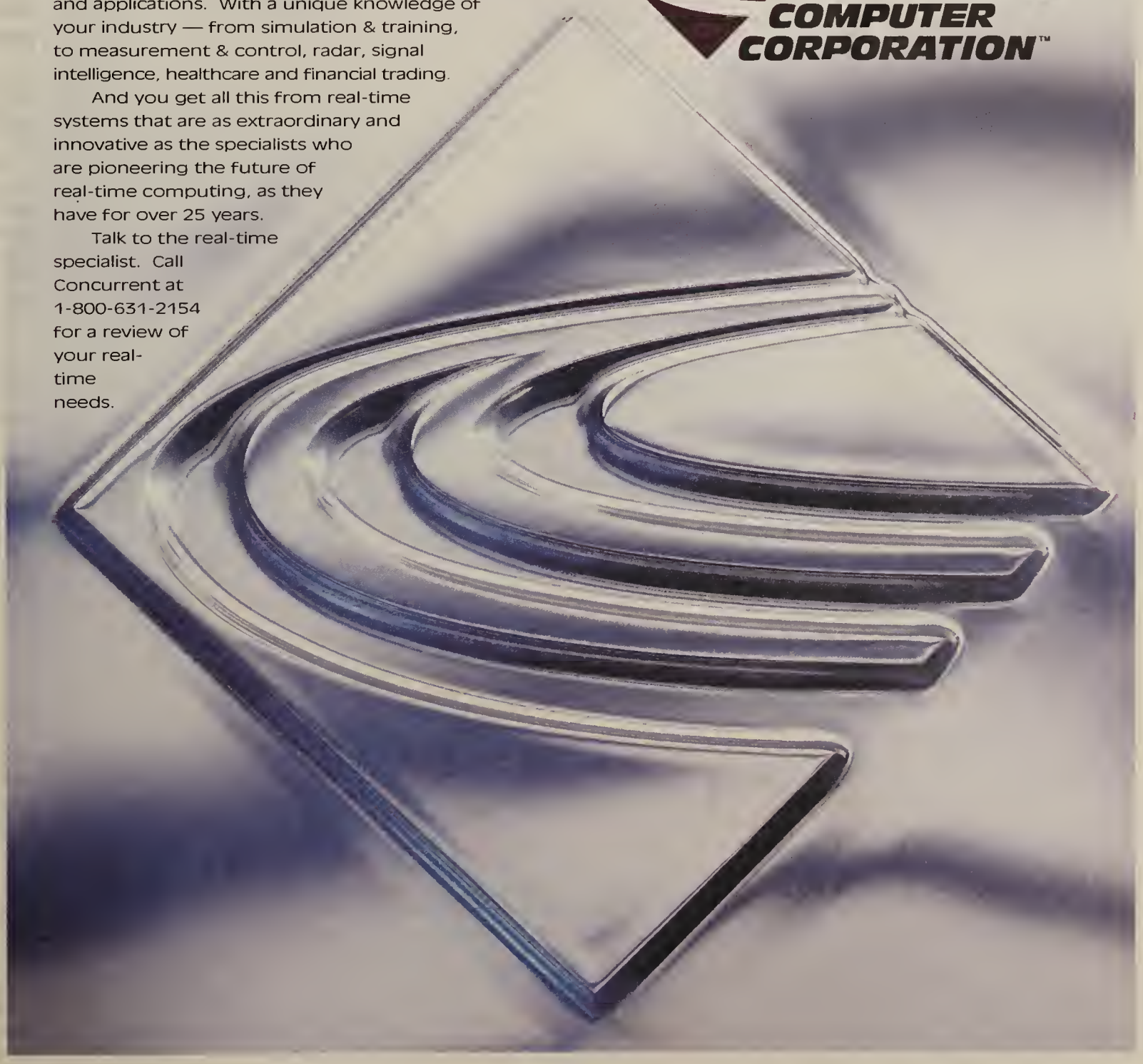


NEW PRODUCTS

Database management

Management Information Technology, Inc. has introduced a full-featured version of the company's DBA Master.

The product is an automated relational database management system monitoring and tuning tool that runs on Microsoft Corp.'s Windows. According to the company, users can perform reporting, analysis and tuning activities for multiple databases on mixed platforms from a desktop machine.

DBA Master for Windows has an assortment of features, including the ability to develop a tool for monitoring the full corporate data system and the ability to generate graphics from DBA Master reports.

Prices start at $2,500.

Management Information Technology
2895 Temple Ave.
Long Beach, Calif. 90806
(310) 424-4399

Gupta Technologies, Inc. has announced commitment to Microsoft Corp.'s Open Database Connectivity (ODBC) application programming interface and connectivity to Application System/400 and Informix Corp. databases.

This is achieved through Gupta's SQL Router connectivity. The interoperability strategy was designed to provide the benefits of the company's Windows-based graphical tools and client/server technology together for all industry-standard SQL database users. Gupta's interoperability strategy includes the ability for Gupta's SQL Windows and Quest tools to connect to Informix, AS/400 and ODBC-enabled databases.

SQL Router for the AS/400 and for Informix are both priced at $250 per client.

Gupta Technologies
1060 Marsh Road
Menlo Park, Calif. 94025
(415) 321-9500

Platinum Technology, Inc. has announced enhancements to its Platinum products for OS/2.

Platinum RC/Migrator is a tool for DB2 designed to completely automate the process of alternating and migrating DB2 data, objects and security. Platinum RC/Update is a DB2 object and data management tool. RC/Update enables users to create and maintain all DB2 objects, drop and optionally recover objects, browse, edit and copy DB2 data.

The product can also test embedded SQL in programs and execute SQL in batch or on-line mode, the company reported.

Prices for mainframe versions of the products range from $17,250 to $87,297.

Platinum Technology
555 Waters Edge Drive
Lombard, Ill. 60148
(708) 620-5000

Information Builders, Inc. has announced Enterprise Data Access server software.

The software was designed for Hewlett-Packard Co.'s HP MPE/IX operating system on HP 3000 Series 900 business systems and servers. The product is client/server software that allows third-generation language and SQL-based tools on the HP 3000 to access databases such as Turbo/Image and HP flat files, the company reported.

Prices for the EDA/SQL server software range from $8,000 to $118,500.

Information Builders
1250 Broadway
New York, N.Y. 10001
(212) 736-4433

Software application packages

Advanced Software Products Group, Inc. has introduced the RMT/MVS Toolkit, a mainframe software program designed for MVS and VM environments.

According to the company, the product is a decision-support tool that provides users with answers to management questions about system capacity and utilization. Reports regarding key resource use can be made, addressing questions such as the effect of combining two work loads onto one CPU.

Output is then provided in three forms: hard copy, graph files ready for Software Publishing Corp.'s Harvard Graphics and report files in personal computer format.

Prices range from $9,900 to $35,500.

Advanced Software Products Group
995 8th Ave. South
Naples, Fla. 33940
(813) 649-1548

Pritsker Corp. has introduced Version 5.2 of its Factor Finite Capacity Management System.

According to the company, Factor is an integrated software system that has a full range of capacity management applications. Factor includes finite capacity scheduling, engineering analysis and accurate operations planning. Enhancements to Version 5.2 of Factor for the Application System/400 include the addition of several new output reports, a schedule development module that incorporates a new work and results capability and 50% or more increased speed of data transfer from the AS/400 host to the company's personal computer-based graphical Gantt chart schedule display and adjustment application.

Prices start at $15,000.

Pritsker
Suite 500
8910 Purdue Road
Indianapolis, Ind. 46268
(317) 879-1011

In search of CASE standards

Bevy of government, industry proposals makes choosing more difficult

BY GARRY RAY
CW STAFF

The quest for computer-aided software engineering (CASE) standards has, if nothing else, produced an array of acronyms, models and implementations that may prove confusing to anyone following recent developments in the field. Part of the problem is the growing number of government and industry standards organizations that are submitting proposals that supersede and overlap one another.

CASE vendors and users agree almost universally that CASE tools should "plug and play" with one another. That requires a CASE framework with widely disclosed integration interfaces.

Such a framework should support a variety of analysis and design tools, compilers, languages and utilities such as editors, debuggers and software metrics analyzers — all from different vendors. Moreover, these tools should be able to communicate within the CASE framework via a messaging system, send and receive data and start and stop other tools in the framework.

For tools developers and users, open CASE requires a set of standard protocols and interfaces within a development framework.

Advocates of "open CASE" agree on three levels of tool integration. The first is visual integration, which is currently provided by IBM's Common User Access standards for graphical menuing systems and by the Open Software Foundation's Motif graphical user interface and Sun Microsystems, Inc.'s Open Look.

The second level, control integration, provides a means for tools to send messages and commands to one another. Current proposals and implementations of control integration include the following:

•**Broadcast Message Server** (BMS) — Allows tools to "register" with the BMS for certain classes of messages and operations. When BMS receives those messages, it sends them to registered tools. BMS is used in Hewlett-Packard Co.'s HP Softbench, Digital Equipment Corp.'s DEC Fuse, Sun's ToolTalk and IBM's SDE Workbench/6000.

•**Common Object Request Broker Architecture** — CASE entities are represented as objects and classes. Tools can recognize messages from CASE entities of specific class types.

•**A Tool Integration Standard** (ATIS) — Developed by Atherton Technologies, Inc., ATIS provides interfaces and services for both control and data integration through the company's Backplane framework. ATIS is under consideration as a standard by the American National Standards Institute's (ANSI) X3H6 CASE committee and is being used in DEC's CDD/Repository.

Data integration is the third level of the open CASE model. It allows one tool, such as the output of a debugger, to be transferred to another tool, such as an editor. Dominant data integration proposals include the following:

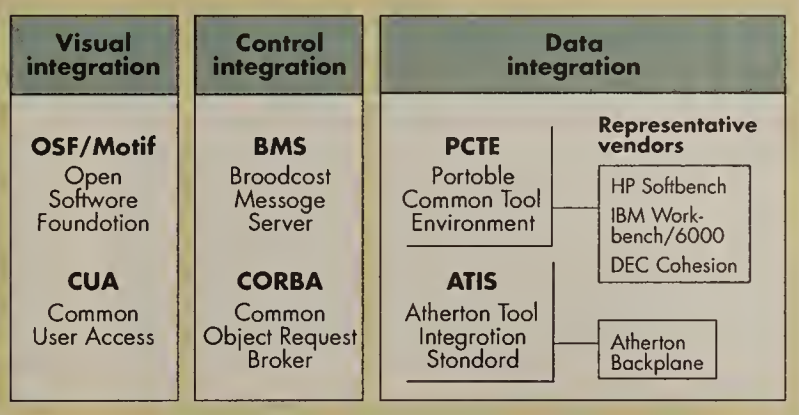
•**Portable Common Tool Environment** (PCTE) — A proposal from the European Computer Manufacturer's Association, PCTE establishes a common mechanism for storing and sharing data among different tools at the file level. Public support for PCTE has been expressed by DEC, IBM and a host of CASE tool vendors.

•**CASE Data Interchange Format** (CDIF) — A proposal from the Electronic Industries Association, CDIF defines how CASE tools might transfer and share data within a CASE environment. CDIF includes a common syntax to identify the content and meaning of shared CASE data.

•**Information Resource Dictionary System** (IRDS) — A proposal from the International Standards Organization and ANSI, IRDS describes a number of services to be provided for CASE repositories.

Standards drive software engineering frameworks

Tools vendors are rallying around a number of standards to integrate CASE and other software development tools



CW Chart: Stephanie Faucher

Unisys to port Mapper

BY THOMAS HOFFMAN
CW STAFF

ATLANTA — Unisys Corp. last week detailed its plans to port its Mapper application development tool set to several multivendor platforms, including IBM's RISC System/6000, Sun Microsystems, Inc.'s Scalable Processor Architecture (SPARC)-based systems and The Santa Cruz Operation's SCO Unix System V/386.

Utilizing the Cube and Use, Inc. combined user group conference as a platform, Unisys executives said the first ports would be made to the Sun platform by the second quarter of 1993. Follow-on ports to IBM's AIX and SCO Unix would begin shipping by the third and fourth quarters next year, respectively.

Reto Braun, Unisys president and chief operating officer, said the Blue Bell, Pa., computer maker was responding to customer requests for Mapper ports to multivendor environments.

Fits the bill

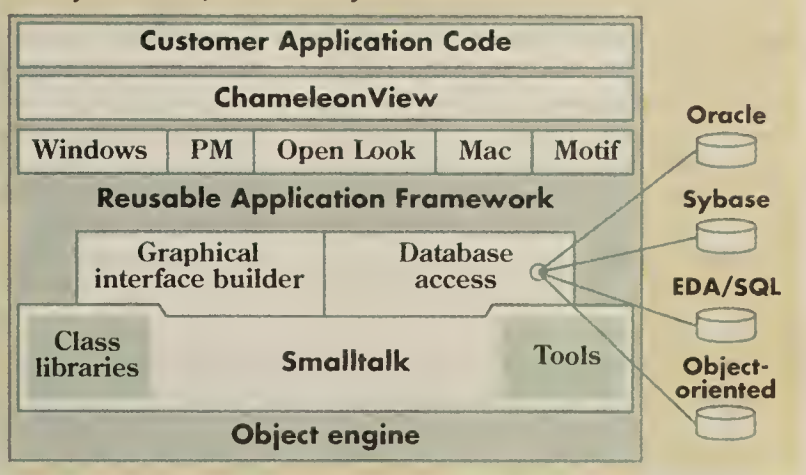
One of the conference attendees, Richard H. Miller, assistant director of technical support at Baylor College of Medicine in Houston, said the Mapper ports fit into the university's strategic plans.

Baylor currently develops Mapper-based applications on a Unisys 2200/423 mainframe. However, Miller said the school wants to integrate these applications with its Sun SPARC hardware environment and a Sybase, Inc. database engine. Miller said the planned ports will enable the university to do this.

"We're ecstatic about these Mapper ports," Miller said. "This will help us in our goal to develop a common system for all university users."

Portability

Automatic cross-platform portability and access to varied databases are key elements of ParcPlace Systems' VisualWorks



Source: ParcPlace Systems, Inc.

VisualWorks from ParcPlace debuts

BY JEAN S. BOZMAN
CW STAFF

SUNNYVALE, Calif. — ParcPlace Systems, Inc. said last week that it will address user demands for ease of use and quick development with a new product, the VisualWorks developer's environment for client/server applications.

The package can be used as an upgrade to the firm's Objectworks/Smalltalk language.

VisualWorks supports multiple graphical user interfaces (GUI) and allows programmers to deploy a single Smalltalk client/server application on diverse desktop systems without revising the GUI support. Early users said they shortened development time by building on predefined GUI objects and gateways to database servers.

VisualWorks is an attempt by ParcPlace to break away from its image as a technology company that is insulated from user needs by providing quick training and user-friendly features. Smalltalk users have said it takes six months to become adept at its object-oriented style of programming.

Right the first time

One early user, the Snohomish Public Utility District in Everett, Wash., built a prototype power grid map in six weeks using a beta-test copy of VisualWorks.

"We needed a tool that would allow us to develop an application once and then let the application look like the native environment on many different platforms," said Dave Tovrea, a technical consultant. The firm accesses a Digital Equipment Corp. VAX database from IBM-compatible personal computers, Apple Computer Inc. Macintoshes and Unix workstations.

The VisualWorks developer's environment contains an icon-based "palette" that lets users select GUI elements and copy them onto a working "canvas," ParcPlace said. A function called ChameleonView automatically adapts the underlying Smalltalk code to several GUIs, including Microsoft Corp.'s Windows, the Apple Macintosh, the Open Software Foundation's OSF/Motif, IBM's OS/2 Presentation Manager and Sun Microsystems, Inc.'s Open Look.

All inclusive

"Depending on the complexity of your application, you might be able to do the whole thing with this new [VisualWorks] environment," said Judith Hurwitz, president of the Hurwitz Consulting Group in Newton, Mass. "You can do interactive prototyping and jump into Smalltalk when you need to."

But users will need to use a companion C tool kit to link their new Smalltalk applications to other Microsoft Windows applications.

VisualWorks can also act as the glue that links object-oriented applications on client machines with back-end relational database servers. It contains a $495 server gateway that connects with Oracle Corp. and Sybase, Inc. relational databases. The ParcPlace tool kit has a $995 module that supports Information Builders, Inc.'s EDA/SQL gateway.

Pricing for the VisualWorks system is $5,000 for Unix computers and $2,000 for IBM-compatible PCs and Apple Macintosh computers. The system is available for immediate shipment, ParcPlace said.

Revolve analyzes Cobol code

CARY, N.C. — Burl Software Laboratories, Inc. has begun shipping beta-test copies of Revolve, a tool for analyzing Cobol source code and associated CICS and DB2 commands and job control language.

Using Microsoft Corp.'s Windows or IBM's OS/2 Presentation Manager, users can write custom queries — such as, "Show in red the paragraphs with GOTOs that do not lead to an EXIT" — to analyze a single program or dozens of programs at once, according to Burl. It comes with user-modifiable canned reports and a flexible query language, called REQL, for building custom reports.

Ken Romley, a vice president at Burl, said Revolve offers three advantages over some competitive products:

- It is not limited to a finite set of predefined queries. Any information contained in the source code can be analyzed.
- It can take a very wide view of a complex set of programs and then drill down to "the three or four pinpoints" you need.
- It is not necessary to preprocess programs to build in codes or mechanisms that allow the tool to work.

Romley said Revolve will be most useful when used with old, or poorly written and maintained software. "Typically, old code does not have good modularity and structure," he said. "We design it, we build it, it works fine. But then we fix some bugs, our business changes, and the software changes a piece here, a piece there. Pretty soon it's out of control."

Revolve allows multiple views of the source code on one screen. For example, one view might give a bird's eye view of an entire program while another shows a flow chart of the calling hierarchy and another displays a dynamic data dictionary. Different views and levels can be chosen by clicks on the mouse, and information requested is highlighted in color.

Romley said Revolve will be available Jan. 1, and beta-test copies can be obtained now. He said pricing will be announced in 30 days and is likely to be less than $5,000 per workstation.

GARY H. ANTHES

Graphical tool for IBM APPC

REDMOND, Wash. — Wall Data, Inc. has announced Rumba Tools for APPC, a graphical development tool for the IBM Advanced Program-to-Program Communications (APPC) interface.

Rumba Tools for APPC reportedly allows developers to write Microsoft Corp. Windows-based APPC transaction programs without being APPC experts. The developers can use the VerbTalk scripting language to script between transaction programs. VerbTalk scripts, created using a point-and-click interface, can be called from a Windows program or the logic can be ported to C, Cobol or PL/1 applications.

Windows Dynamic Link Libraries are included and give support to APPC/LU6.2 communications and an interface to Microsoft's Visual Basic.

Rumba Tools for APPC can be used individually or with other Rumba software for IBM mainframes or the Application System/400.

The tools are scheduled for availability in the fourth quarter of this year for a license fee of $495.

CHRISTOPHER LINDQUIST

IN BRIEF

Software firms license HP

Objectivity, Inc., based in Menlo Park, Calif., and **Micro Focus, Inc.** in Palo Alto, have licensed Hewlett-Packard Co.'s SoftBench application development framework for development of Unix-based applications. Objectivity plans to incorporate SoftBench's Broadcast Message Server, a standard for getting development tools from other vendors to work together, into Objectivity/DB, an object-based database management system that runs under Unix. Micro Focus users will be able to use tools available under SoftBench when building Cobol applications.

West Coast firms using tools from Providence, R.I.-based **Cadre Technologies, Inc.** to do computer-aided software engineering (CASE) can learn to use the products at a new training center in San Francisco. Separately, Cadre expanded a joint development pact with **Ingres**, a division of The Ask Cos. in Los Altos, Calif., to let developers use Cadre's DB Designer to build Ingres databases and applications and re-engineer existing databases.

Popkin Software and Systems, Inc. in New York unveiled System Architect 2.4, an enhanced version of its personal computer-based CASE workbench. Among other features, the new version sports editing capabilites to add information about the relationships between record types in the data dictionary, the company said. The product is free to users with annual support contracts.

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NEW PRODUCTS

Application development tools

Berard Software Engineering, Inc. has announced A Completed Object-Oriented Design Example.

The product was designed for users who are considering using an object-oriented approach to software development. According to the company, the 350-page example includes design documentation, more than 2,000 lines of C++ source code and more than 1,000 lines of SmallTalk source code. The product also includes copies of 170 slides from the company's design course.

The object-oriented design example costs $50.

Berard Software Engineering
Suite 360
101 Lake Forest Blvd.
Gaithersburg, Md. 20877
(301) 417-9884

Liant Software Corp. has upgraded its C-scape User Interface Management System, an object-oriented C development tool.

According to the company, the product was designed for rapidly creating portable text and graphics-based user interface applications.

Version 4.0 offers users the ability to create professional-grade screens using new Common User Access borders for graphics and text mode, menus, scroll bars, minimize/maximize buttons and other advanced windowing functions.

An improved and expanded five-volume documentation set is included, as well as new date and time functions.

Prices start at $499.

Liant Software
959 Concord St.
Framingham, Mass. 01701
(508) 872-8700

Champs Software, Inc. has introduced Champs/Case, an advanced development tool.

According to the company, the product enables users to quickly create, implement and maintain high-integrity applications at a low life-cycle cost. Champs/Case is a VAX Rdb/VMS layered product that generates 100% of the C source code for complex applications. The product is distributed in three modules: a Dictionary Development and Maintenance Module, an Application Development and Maintenance Module and an Object Dependency Tracking Module. Champs/Case integrates with Digital Equipment Corp.'s DECforms product.

Prices start at $9,000.

Champs Software
1255 N. Vantage Point Drive
Crystal River, Fla. 34429
(904) 795-2362

Computer-aided software engineering

Pacific Gold Coast Corp. has released the Enhanced Version of PGC Computer Aided Software Engineering Graphics.

According to the company, this version includes quicker editing, offering the ability to simultaneously move and update symbol objects, associated labels and connections.

Other enhancements include three levels of style selection, portable tools and the capability to define image size, the company said.

Multiple design tools are provided in the software and information systems development process, and the product supports most analysis and design tools, including Object-Oriented Analysis and Data Flow Diagram.

The package costs $149.95.

Pacific Gold Coast
Suite 201
15 Glen St.
Glen Cove, N.Y. 11542
(516) 759-3011

Code libraries

Aladdin Publishing, Inc. has introduced three versions of ClipSQL libraries that support Microsoft Corp./Sybase, Inc. SQL Server, the Oracle Corp. SSQL server and Gupta Technologies, Inc.'s SQLBase Server.

Users can utilize the libraries to create portable applications with the ClipSQL. In order to port an application, users relink the application with the correct ClipSQL library without making any source-code changes.

According to the company, the product supports all SQL commands and allows users to create or delete tables and retrieve and update or delete rows.

Some of the product's functions include SQLLogin, which allows applications to log in to the database server, SQLUse and SQLQuery.

The ClipSQL libraries cost $495 each.

Aladdin Publishing
126 S. Helberta #4
Redondo Beach, Calif. 90277
(310) 798-6488

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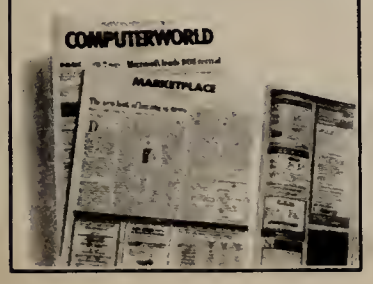
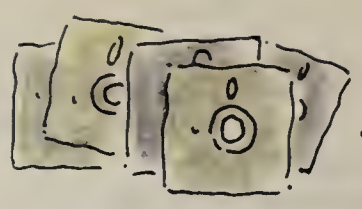
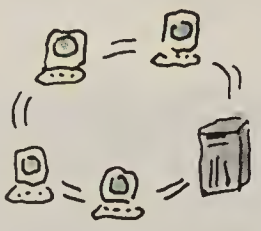
Check out the Marketplace Pages on Page 122.



Nothing worked. Everybody had different  .

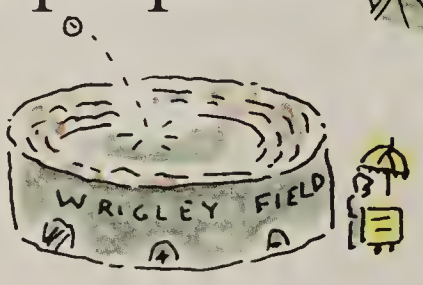
And we had and and everywhere, so it

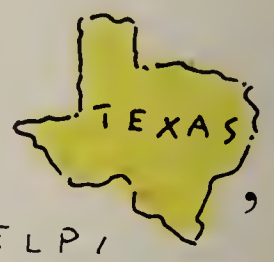
was next to impossible to share . Very depressing.

What's more, the  we had sometimes didn't to

each other. And forget about the rest of our offices throughout

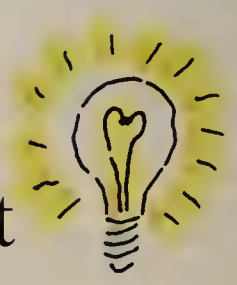
the . Our people in couldn't communicate

with our people in  . They, in turn, were cut off

from . And nobody could talk to the guys in  ,

but that's another story. Our PC managers were .

No one knew what to do.

Then, at a big , someone had a great  .

"Let's put in charge of everything!" he exclaimed.

Everyone at the meeting because they knew **IS** would

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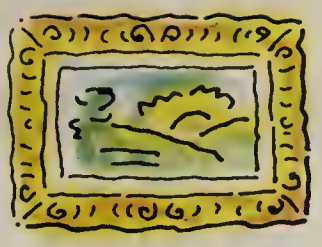
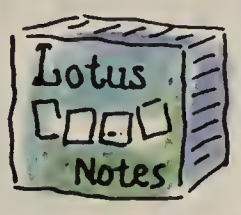
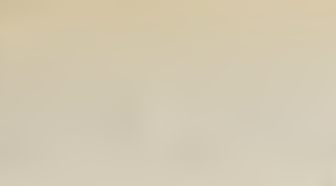
see the big  and bring order to the . And so

they did. They created a client/server architecture with Microsoft

as the GUI, 

as the communication medium,

and core applications that on both. They also replaced

our old 286's with snazzy new 486  , and trained local

people to provide and service.

Now, everything works. We can even talk to the guys

in

now, although we still don't understand what

they're saying. But like we said, that's another

. For the

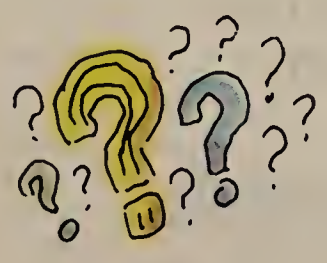
whole story on

, write us or

800-343-6474

and ask for our

, **"The Book on IS."** It'll answer all

your  about **IS**. And tell you why **it's the biggest**

computer market in the .

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"As a Windows™ development environment, PowerBuilder is as good as they come..."

Rich Finklestein, Performance Computing Inc., July 27, 1992

"Other vendors providing tools for building applications will have a difficult time competing with the features currently supported in PowerBuilder 2.0."

DATAPRO REPORT, July 1992

"With version 2.0...PowerBuilder moves to the head of its class. [It] represents the state of the art in front-end tools."

PC MAGAZINE, September 29, 1992

"If you're shopping for a Windows-based development tool, your search may be over—PowerBuilder 2.0 is one of the most functionally mature products of its kind on the market today."

DBMS, October 1992

What the expert professionals are saying:

"PowerBuilder incorporates object-oriented philosophies, such as inheritance and polymorphism. It allows objects to be inherited for use in other places without having to rewrite the code."

Sarah Edwards, AT&T Capital Corp.

"PowerBuilder is easy to use, intuitive and very well supported. It offers the only reasonable way to develop applications today."

Bob Passarella, Comdisco, Inc.

"We selected PowerBuilder because it is designed to build true business applications. PowerBuilder's ability to completely manage the database transactions sets it apart from other tools. It is a true database tool."

Kent Anderson, 3M Corporate Quality & Manufacturing Services

"PowerBuilder offers the most robust and flexible client/server development environment on the market today."

Jim Vance, White Castle System, Inc.

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Project management gets easier

BY DANIEL YAHDAV

If you haven't looked at project management software lately, you might want to get reacquainted. It has changed: It's easier to use and better suited to the multifaceted job of software development, and it very well may help you rein in your development projects.

Not only were past packages plagued by poor integration of the major functions required by developers, project managers and senior information systems managers, but they were also considered unnecessarily complex to navigate.

But with the introduction of Microsoft Corp. Windows-based packages and high-end personal computer versions, this software category is heating up to the extent that even mainframe versions are using PC interfaces.

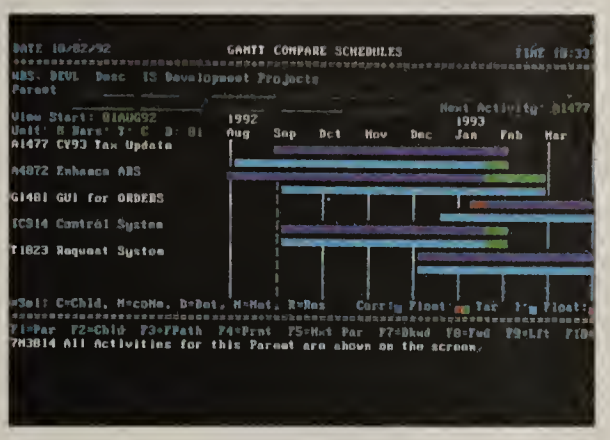
As a result, the question is not so much *whether* you can benefit from using the software but rather the extent to which you can contain budget overruns and improve management of day-to-day activities.

Selecting a system is a tremendous job, and your success depends primarily on how well you analyze your needs and how much time you spend learning what's on the market.

Packages range from simple schedulers to enterprisewide solutions. Some are single-user, and a growing number permit distributed project management with a centralized repository. There are many PC-based products, several mini and mainframe systems and a few that let you combine platforms.

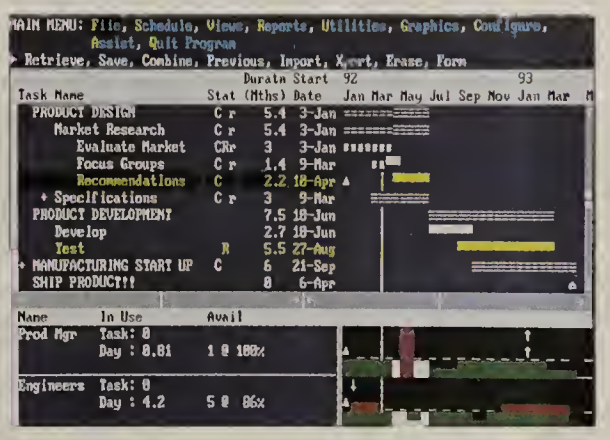
You can also customize the look and feel of off-the-shelf products or standardize on software with just the basics.

We've chosen to look at the new, easy-to-use packages as well as those that are geared specifically for the IS job. Also impressive are the very high-end PC packages that are becoming as functional as the mainframe.



MAINFRAME-BASED PACKAGES

IS-specific programs are traditionally character-based mainframe systems and take the most time to learn. However, not only are they increasingly available in PC versions, but they are also establishing interfaces to PCs and providing GUI-based interfaces. Often based on data repositories, these programs are better integrated and more functional than classic programs and are still the best suited for IS.

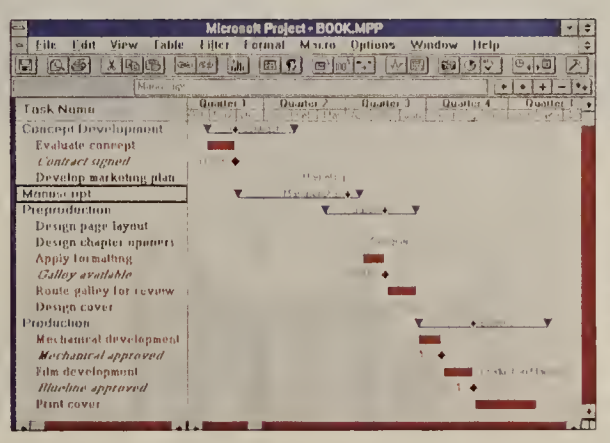


DOS-BASED PACKAGES

The majority of DOS packages have roots in classic project management software. They are more flexible than most IS-specific programs in the area of scheduling. In addition, the menus are more advanced, graphics are easier to customize and more interactive features are offered.

GRAPHICAL DOS-BASED PACKAGES

Graphical DOS-based packages have all the advantages of DOS-based packages, plus the ability to use everything in full graphics mode. The major difference is that they allow a bit-mapped mode of the screen to be addressed vs. a character mode. These programs come closest to Windows without having to standardize on that environment.



WINDOWS-BASED PACKAGES

Most of these packages are classic, although more and more are IS-specific. These programs are the most user-friendly and interactive. Screens include more detail, selected fonts and enhanced characters. The only requirement is that Windows-based programs have more hardware resources.

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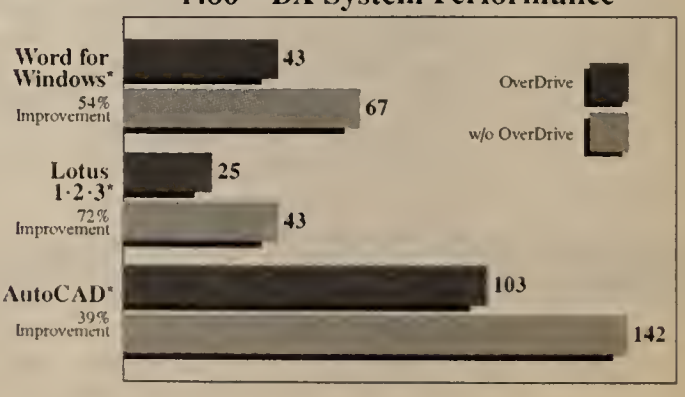

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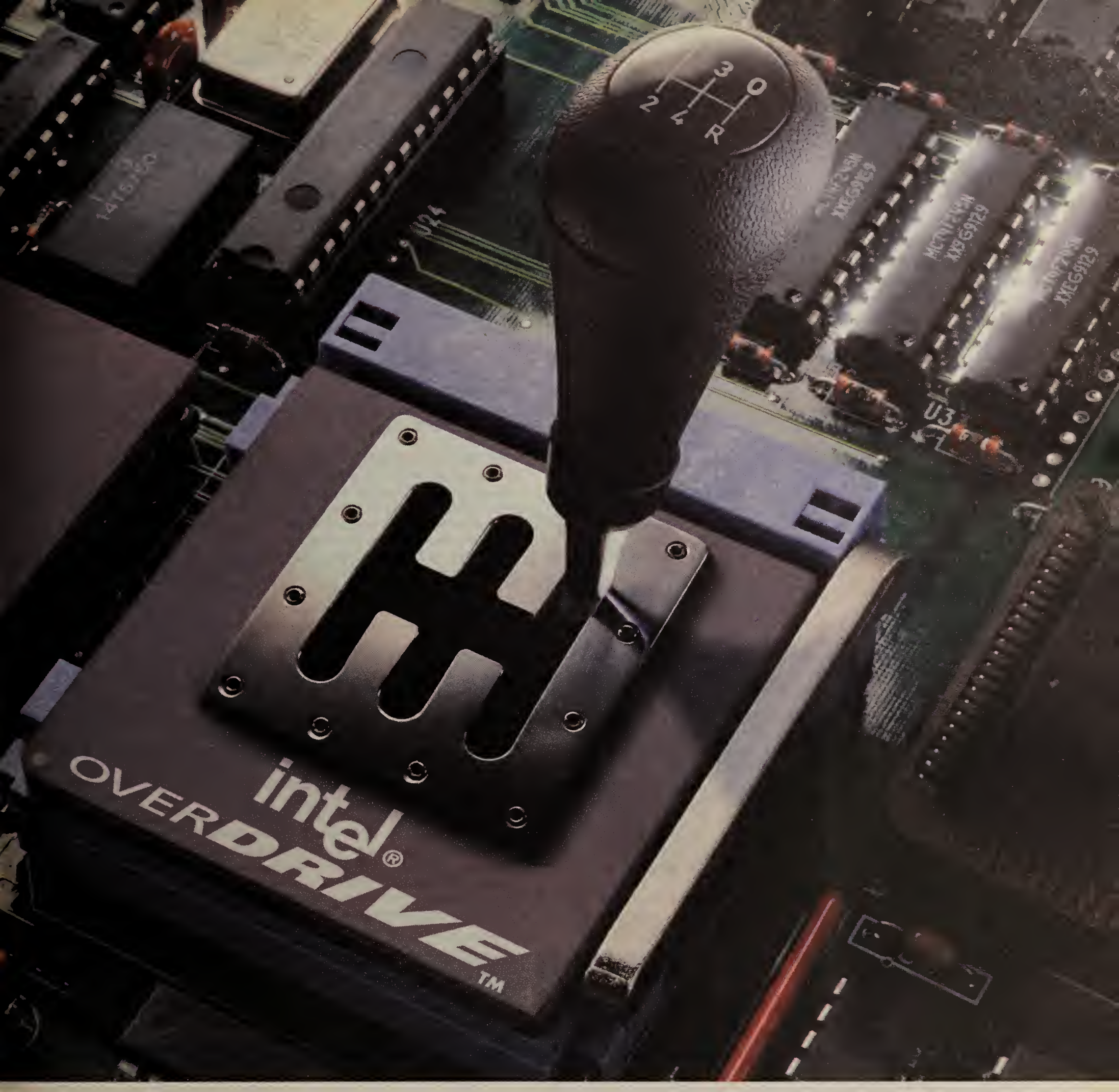

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Steps toward usability

AFTER ALL THE YEARS OF BEING DIFFICULT TO USE, project management software has just gotten easier. Until the late 1980s, power and versatility in a package also meant that it was extremely difficult to learn and operate. But lately, vendors have been concentrating on making project management more efficient, more automated and just plain easier to navigate. A prime agent in all this has been Microsoft's Windows, which is making PC and even mainframe-based programs less intimidating to use.

To understand how much better the software is, it's important to know your full range of choices. There are essentially two distinct types:

•The modular method.
The longest-standing types of project management software (typically mainframe and DOS platforms) are really groups of individual modules. Sometimes they are built by the same developer and packaged as an entire "solution."

An extremely full suite of modules would include the following:
➤Project template design.
➤Estimating methodologies.
➤Scheduling functions.
➤Resource and cost management.
➤Tracking of actuals.
➤Time reporting and chargeback.
➤Work request systems.
➤Common facility.
➤Computer-aided software engineering interfaces.

Generally, each module was quite easy to use and learn, but the lack of integration among them was problematic.

Today, some of these scheduling and control programs are offering more (and better) integrated modules (especially through the use of Windows Dynamic Data Exchange, or DDE) as well as better user interfaces. Vendors whose packages are more integrated than ever before include **Applied Business Technology** (Project Workbench in DOS version), **Computer Associates International, Inc.** (CA-SuperProject for DOS) and **Lucas Management Systems** (Prestige for Windows).

•The database approach.
The second type of project management software does not have the integration problems exhibited in the first type of package because it was originally developed on top of a database. The database acts as a central repository for data integration and can be customized.

But while this makes data more integrated, these types of packages are generally more difficult to learn. Many even resemble the old mainframe interface with character-based graphics. Recently, however, some of these programs have become more interactive, with more advanced graphics, better on-line Help and a friendlier user interface, especially the ones running under Windows.

Some examples include **AGS Management Systems, Inc.**'s firstCASE, **LBMS, Inc.'s** Project Engineer, **POC-IT Management Services, Inc.**'s Microman II and **Multitrak Software Development Corp.**'s Enterprise-Wide Work Management System, which offers a distributed solution where project planning can be performed on the desktop and all other tasks on the mainframe.

Now here's a look at what both groups of vendors have been doing to overcome their prime shortcoming: ease of use.

DANIEL YAHDAV

Better learning tools

One way vendors are making systems easier to use is to improve the Help facilities, thereby shortening the time it takes to learn the system and helping the user work through unfamiliar territory.

Good on-screen tutorials are essential for those learning a project management program. These aren't too difficult to come by because more vendors are including tutorials than before, especially in Windows-based products. Tutorials are better and more complete today than in the past, explaining not only major program functions but also exemplifying the actual screens, charts and menus.

However, it is no longer enough to provide on-screen, context-sensitive Help on request. The ante has been upped, now that a few programs have come out that don't wait until you ask for help; they can sense the exact question you have, based on where you place your cursor.

The best example of this is **CA**'s CA-SuperProject (both DOS and Windows versions). As you move your cursor, the program displays short explanations of what data you can enter in a field; as you point to a menu command, it tells you what your command options are. You can turn on the Assist mode, which displays a four-line window with more complete Help. This feature is also available in **Scitor Corp.**'s PS5.

Perhaps second-best to CA-SuperProject (in terms of the depth of help and the level of detail) is the context-sensitive Help initiated by user requests and offered by most programs today, such as **Symantec Corp.**'s Time Line and **Microsoft**'s Project (both for Windows).

Another unique Help tool is The Planning Wizard, which so far only Microsoft offers. It allows you to select from a menu a problematic issue. The program then shows you the necessary steps in slow motion so that you can learn them.

This tool is great for learning a function you have never tried before or for semiautomating what you already know. Although it currently covers only a small number of issues, in a full-blown form it may eliminate the need for tutorials and user manuals as well as make some of your jobs easier.

The easiest to use

These are scheduling and control programs. While comprehensive in their functionality, they lack some of the important functions that IS people require.

	Microsoft Corp. (800) 426-9400 Microsoft Project 3.0 for Windows $695	Scitor Corp. (415) 570-7700 Project Scheduler $695	Symantec Corp. (415) 898-1919 Time Line for Windows $695
Context-sensitive Help	■	■	■
Tool bar icons	■	■	■
Macros	■	■	
Self-guided functions, tutors or Help	■	■	■
Artificial intelligence capabilities			■
Interactive graphics	■	■	■
Interactive PERT charts	■	■	■
Interactive Gantt charts	■	■	■
Interactive resource histograms	■	■	■
Platform	Windows, Macintosh	DOS, Macintosh, OS/2	Windows

Once you've mastered the system

Once you've learned how to navigate the program, you will want functions that a) save you keystrokes and b) free you from memorizing the steps needed to perform a complex task. The following features help in both areas:

•Tool bars. Most Windows programs and a handful of DOS ones, such as **Computer Aided Management**'s PARISS Enterprise, offer extraordinary tools to minimize keystrokes; among these, tool bars are the best example.

Tool bars offer handy buttons that you can invoke with a single click of a mouse to implement a certain job that would otherwise take several keystrokes to perform.

•Macros. A macro facility allows you to program a set of keystrokes. **Microsoft**'s Project, for instance, does an outstanding job. It not only lets you define any set of repetitive commands that you expect to use frequently but can also prompt the user for questions about the specific run and add it to the tool bar icons for later use.

•Multi-item editing. With this tool, you can add, edit or post progress of the same nature for multiple tasks, resources or assignments as if they were a single item. The best implementation can be found in Microsoft's Project, where updating a set of tasks to 100% done can be accomplished in one shot.

•Screen customization. Users are more productive when they can change screen items from one spot. A unique screen customization function is available in **Applied Business Technology**'s Project Workbench for Windows. With the click of a button, a screen layout window pops up and allows you to customize up to three synchronized views at one time.

•Incremental zooming. With the click of a button, you can zoom in on details such as a Gantt chart or Program Evaluation and Review Technique, or PERT, or zoom out to see the big picture. A powerful capability of this kind can be found in Project Workbench and Time Line.•

Maximizing efficiency

Some of the available efficiency functions can save you and your company more time than all other facilitating tools combined. There are two major efficiency enhancers: those that help you create accurate project models and those that automate complex processes.

•**Modeling accuracy.** Some packages contain features that help users reduce logical errors and improve modeling accuracy. **Symantec**'s Time Line for Windows offers such a feature, called Co-Pilot, that evaluates user input and, if more than one interpretation is possible, lists all options for you to choose from.

For example, when you graphically schedule a new task on a Gannt chart just after another task ends, the program alerts you to the ambiguous situation. You can decide if a link to the other task should be made or if the new task will be scheduled relative to that date. **Symantec**'s low-end program, OnTarget for Windows, offers a similar function.

Another helpful function is one that alerts you to any circular logic (widely known as logical loops) that you might input. However, most programs are not able to give you an immediate, interactive warning of these loops, or they don't usually list all affected tasks.

CA's CA-SuperProject is one of the few programs to offer a clear view of both the project logic and task durations on a single, easy-to-read and fully interactive chart, named the Logic Barchart. This chart has been known to offer complete answers to many scheduling questions, including questions about circular links; unfortunately, it is interactive only in a handful of programs. Perhaps this is because it is too complex to program and not as useful to represent under DOS as it is under Windows.

Other products that include this capability include **Computer Aided Management**'s PARISS Enterprise (DOS) and **Symantec**'s Time Line and OnTarget (Windows versions).

> PRIME BENEFITS TO IS will become evident once different project management modules or programs support OLE.

•**Process automation.** Automating a process always saves you time; so does moving separate databases to integrated ones. Data integration means better information is passed along with less human error and effort. Also, the fact that it is automatic means you'll save time whenever you need to do this job again. Another way to save time is to automate specific processes that you don't currently automate, such as your work request system.

There are many examples of process automation features. For instance, Windows programs using Dynamic Data Exchange and Object Linking and Embedding (OLE) offer a new standard of automating processes. Unlike import/export, DDE helps you dynamically link any two data items between different projects (to establish cross-project links, as in Microsoft's Project) or between two different programs (such as your project management software or word processor).

Why would this come in handy? A link can be established between the project management software to a spreadsheet program to allow further analysis or better charting.

Or you may want to automate the link between timesheeting and progress reporting, when the two modules can otherwise be interfaced only through import/export functions.

OLE is another form of interapplication linking that can save you time. It was designed to link different applications and to embed documents of different types and file formats in your current application. For example, you can display a live copy of your PERT chart in your word processor.

In this case, the available technology is a bit ahead of the application because very few programs support it. Prime benefits to IS will become evident once different project management modules or programs support OLE. For example, IS managers will eventually be able to review the reasons for some cost overruns in a project while writing a status report in a word processor to a project sponsor or client.

Some process automation tools available only in IS packages are integrated prefix and suffix functions. The prefix is composed of sophisticated front-end modeling tools, and the suffix is a set of comprehensive tracking and control tools.

The front-end modeling contains templates that provide prepackaged estimates based on the type of projects being planned. It also contains a module to estimate project size based on various methodologies, such as the industry-standard function point analysis or experience-based knowledge.

These prefixes are intended to make the planning process less tedious and more accurate.

The tracking and control tools let you track work hours, automate project accounting and chargeback, track the status of work requests and evaluate the quality and efficiency with which projects are performed. They are intended to increase the productivity of both the project managers using the program and all others involved in the process. •

Yahdav is an expert in the field of project management software. He is president of 1 Soft Decision, Inc., a San Raphael, Calif.-based consulting firm specializing in helping organizations standardize on project management software.

High-end functions

Once you begin testing a few chosen products, refine your evaluation by asking how well the products handle critical, high-level functions. Vendors may not give complete answers, but they can bring you one step closer to your goal.

► If the program offers planning templates, how easy is it to customize them for different methodologies?

How easy is it to update and customize an experienced-based estimating ?

► When a program supports a given estimating methodology, does it include the entire methodology guideline on screen?

► Does the estimating algorithm offer an automatic correction mechanism?

If it does, how can it be applied toward the future portion of an ongoing project?

► To what extent are the estimating and scheduling systems integrated?

Do they use a common database?

In the capacity of project sizes and number of projects you expect to handle, how long does it take to schedule and resolve conflicts with the number of resources you have with your desired platform?

► How well is the resource-leveling function compared to other programs (does it produce shorter schedules)?

If the system supports a time reporting function, does it reflect the same calendars as in the scheduling module?

What sorts of rules can an administrator set to establish accepted input during users' reported time?

How easy is it to customize the project accounting and chargeback functions?

How do you access project and work requests and obtain status on previous orders?

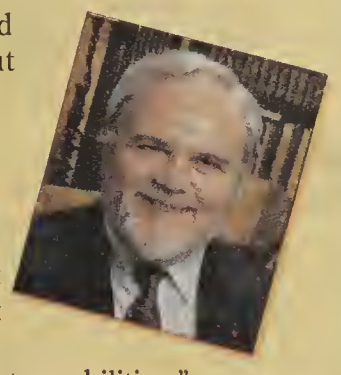
Which parts of the entire system components can include user comments?

Voices of Experience

"I heavily recommend training. We went to class to see what we needed to buy. We had an idea of what our needs were but didn't have all requirements nailed down."

User: Mike Dorough, systems consultant, First Interstate Bank NA, Portland, Ore.

Product selected: POC-IT Management Services, Inc.'s Microman II.



"I put together an evaluation team comprised of a few people who are going to be users but are not computer-literate; a few who are computer-literate but who are not familiar with project planning; and a few who are computer-literate and knowledgeable in project planning. I let these groups individually evaluate a product I am considering to get critiques at different levels, on everything from the interface to how intuitive it is and its project management capabilities."

User: Don Lewis, director of manufacturing, Sperry-Sun Drilling Services, Houston.

Product selected: Micro Planning International, Inc.'s Instaplan Version III.

Source: Alice Bredin, free-lance writer in New York

PC-based, high-end project management programs:

These packages are characterized by sophisticated scheduling, tracking and control capabilities and have the most comprehensive cost accounting functions.

Computer Aided Management, Inc.
Scottsdale, Ariz.
PARISS Enterprise

Lucas Management Systems
Fairfax, Va.
Prestige for Windows

Primavera Systems, Inc.
Bala Cynwyd, Pa.
Primavera

Project Software & Development, Inc.
Cambridge, Mass.
P/X for Windows

Welcom Software Technology
Houston, Texas
Open Plan

PRODUCT SPOTLIGHT

Tailored for IS

AN IMPORTANT ISSUE IN YOUR QUEST FOR project management software is whether you need an industry-specific or a classic program. What complicates matters is that some classic packages have started to incorporate IS functions or can link to a single IS module, thereby blurring the lines between the two. It is possible, however, to specify which features are generally stronger in an IS or a classic package. Below are the main features that distinguish the two.

IS-specific

•**Front-end modeling:** Provides a mechanism to plan and estimate the size of projects. Plans are established through customized templates.

Estimates may be based on either an experience-based database or an estimating methodology such as the function point analysis.

A classic package that has added a front-end modeling module is **Computer Associates International, Inc.**, whose EstiMax and EstiPlan add modeling capabilities to its CA-SuperProject (DOS).

There is also a module that allows you to incorporate front-end modeling into a variety of classic packages. **Kapur International, Inc.**'s ProjectBase can be used in conjunction with **Microsoft's Project for Windows, Symantec Corp.**'s Time Line, **Applied Business Technology**'s Project Workbench, **CA**'s CA-Superproject and **Computer Aided Management**'s PARISS. It accommodates most estimating methodologies.

Partial product list:

AGS Management Systems' firstCASE, which uses function-point analysis.

POC-IT Management Services, Inc.'s Microman II and Microman Esti-Mate, which include complete, integrated front-end modeling based on function point analysis and a correction mechanism.

LBMS' Project Engineer, which incorporates a complete estimating module.

Multitrak Software Development Corp.'s Multitrak Enterprise-Wide Work Management System, which offers a distributed solution, where project planning can be performed on the desktop and all other tasks on the mainframe. It integrates the entire range of IS needs under the same repository.

Applied Business Technology's Project Workbench (DOS and Windows) and Project Bridge, which offer a complete front-end modeling system including templates and a complete implementation of function point analysis.

•**Time reporting:** This is similiar to the "tracking" capability in classic programs (see below) but is a more intense and accurate reflection of when and how project and non-project-related duties (e.g., training and meetings) are conducted.

Partial product list:

Lucas Management Systems' Prestige for Windows.

POC-IT Management's Microman II and Microman Esti-Mate.

Multitrak Software's Multitrak Enterprise-Wide Work Management System.

•**Chargeback:** Allows information to be taken from a time reporting module to charge a client or sponsor. This shows a client how much a project's tasks cost at any given time.

Partial product list:

POC-IT Management's Microman II and Microman Esti-Mate.

Multitrak Software's Multitrak Enterprise-Wide Work Management System.

PlanView, Inc.'s The Intelligent Planner.

•**Work request:** Allows new job orders, such as maintenance requests, to be initiated and tracked until complete.

Partial product list:

Multitrak Software's Multitrak Enterprise-Wide Work Management System.

•**Project accounting:** A link between time reporting and chargebacks. Here, sets of accounts are established, and tasks are linked to specific accounts to show who is accountable for each project.

Partial product list:

Multitrak Software's Multitrak Enterprise-Wide Work Management System.

POC-IT Management's Microman II and Microman Esti-Mate.

Classic

•**Scheduling:** Produces a timetable for all the tasks required to complete a project. (For a list of classic packages, see chart page 101.)

•**Resource management:** Allocates people, equipment and other resources using some kind of a manual adjustment or automatic procedure to all projects. This helps minimize resource over- and under-loads.

•**Costing:** Establishes budgets and cost estimates. Evaluates expenditures in every project.

•**Tracking:** A record-keeping process in which actual start and finish dates are collected for different tasks in a project.

DANIEL YAHDAV

IS-specific project management software

These programs integrate the entire set of tools required by IS groups of all levels

	Platform	Function point analysis	Automatic correct mechanisms	Multiuser accessibility	Client/server architecture	Record locking	GUI-based
Applied Business Technology **(800) 477-6532** **Project Workbench/ Project Bridge** $5,000	DOS, Windows	■	■	■			■
AGS Management Systems, Inc. **(215) 265-1550** **firstCASE 3.0** $19,500 (methodology license) $6,000 (manager workstation) $3,500 (developer workstation)	DOS, Windows, OS/2	■		■	■	■	■
LBMS, Inc. **(713) 623-0414** **Project Engineer 1.1** $2,500 starting price	Windows under DOS, OS/2	■					■
Multitrak Software Development Corp. **(617) 482-6677** **Multitrak Enterprise-Wide Work Management System** $40,000 starting price	MVS			■		■	■
POC-IT Management Services, Inc **(310) 393-4552** **MicroMan II** $2,895 starting price	DOS, OS/2	■	■	■		■	
PlanView, Inc. **(512) 346-8600** **Intelligent Planner 1.3** $2,200-$3,200 per concurrent user	DOS, Windows, OS/2	■	■	■	■	■	■

Peer groups

The following associations and consortiums offer publications, seminars and other support to their members:

Boston University Center for Project Management
72 Tyng Road, Tyngsboro, Mass. 01879
Contact: Dennis Woodruff, director (508) 649-9731

A corporate membership includes access to research studies, advisory board participation and complimentary seats at special events. Other features include consulting, seminars, computer simulation courses and "CPM Bulletin," the center's newsletter. The center also offers the public the monthly Certificate Program in Project Management.

The Center for Project Management
1 Annabel Lane, San Ramon, Calif. 94583
Contact: Raj Kapur (510) 275-8000

The membership program includes program and project management consulting, research, publications and training seminars. The center also publishes a quarterly newsletter, which includes interviews and articles from leaders in the project management field.

Project Management Consortium
Sponsored by The Center for Project Management (see previous listing)

Part of an industrywide effort to share and refine a professional IS knowledge base. Member organizations receive access to Project Central (a tactical methodology office and IS information center), research archives, life-cycle and task-effort data, standards publications and project management training seminars. International memberships are also available.

Project Management Institute (PMI)
P.O. Box 43, Drexel Hill, Pa. 19026
Contact: Karen Condos, marketing manager (215) 622-1796

A nonprofit professional association dedicated to raising the level of excellence in project management through research, monthly periodicals, local charter memberships in North America, Europe and Africa, handbooks and Project Management Professional certification.

The institute has established an Information Systems Special Interest Group and will be presenting a special meeting and technical track devoted to IS project management at the 1993 PMI Annual Seminar/Symposium in San Diego Oct. 1-6.

Soften up!

Adding soft information such as comments, opinions and predictions to your EIS may sharpen decision-making

BY HUGH J. WATSON, CANDICE G. HARP, GIGI G. KELLY and MARGARET T. O'HARA

No manager wants to be accused of making "soft" decisions, but truth be told, soft information plays a key role in many executive choices. Currently, most executive information systems (EIS) include primarily hard information that focuses on internal operations and relies heavily on financial data.

But if EISs are going to be valuable to top executives, they must include soft information such as predictions, opinions, news, ideas and even rumors, say EIS managers who took part in a recent survey. That's because while hard information provides the facts, soft information enhances the facts, enriching the decision-making process.

Hard data, such as financial statements, statistics and historical information, is a natural part of many EISs because their designs are based on reviews of existing reporting systems. However, these systems stop short of providing truly useful information, the kind top chiefs get from networking, having chance conversations, making phone calls, attending meetings and reading.

A change is coming, however, and more EISs are incorporating soft information. Hard and soft information is being combined on a single screen. When a chief company officer can see an explanation (soft) about why actual cash flow (hard) is below budget — perhaps an expected payment arrived the day after posting the month's financials — he can plan more effectively.

Soft information helps executives spot trends and raise questions, thus avoiding problems. Consider how the following organizations surveyed say they use soft information in their decision-making:

- State senators use one EIS that delivers constituent opinions on pending legislation. Such soft data helps lawmakers measure public attitude and decide how to cast their votes.
- A petroleum firm's EIS provides information about important visitors each day. Consequently, the firm's executives are well-informed about customers who come to visit and can greet them by name. Some EISs even provide an electronic version of personal data forms for account executives, enabling them to track personal information about their clients — birthday, hobbies, etc. This information is useful when a customer calls and the executive wants to add a personal touch to the conversation.
- For several major manufacturing companies, soft data about foreign countries helps executives determine whether to ship a major purchase. The information can answer such questions as "Will the country's financial difficulty or political unrest mean slow payment?"
- One pharmaceuticals company plans to incorporate the opinions of experts in its drug research. It will do so by making internal and external opinion papers available through its EIS.

Soft info at work at Pratt & Whitney, Conoco and Lockheed. Page 105.

Who's got what?

According to the study of 32 EIS managers, the amount of soft information included in EISs varies from company to company.

The most popular class of soft information, used by 78% of respondents, includes speculations, forecasts, estimates and predictions. For instance, one financial investment firm in-

Continued on page 104

Scott Baldwin

SOFT TALES

Some people don't think beyond facts and figures and thus miss the big picture.

One of the auditors at Joseph E. Seagram & Sons, Inc. came back from Venezuela, where he was checking the expenses of a subsidiary, and he ran into his boss at the Montreal head office.

"How's business in Venezuela?" asked Sam Bronfman, Seagram's founder.

"I don't know, Mr. Sam. I was there to look at the books."

This reply astonished Bronfman: "Imagine going all the way to Venezuela and never asking how business was!"

Source: *The Book of Business Anecdotes* by Peter Hay (Facts on File).

Continued from page 103

cludes predictions about market prices for better planning. Competitor information includes data not only from external databases but also from internal sources, such as sales representatives, who are an executive's eyes and ears in the field.

For one pharmaceuticals firm, learning that a competitor was about to launch a similar new drug allowed the firm to pour additional resources into its drug production and successfully beat the competition to market, the manager in charge of the EIS says.

This type of information is so important that those respondents who are considering adding soft information to their systems indicate that competitor information is a key area for the future.

Explanations, justifications, assessments and interpretations are included in 66% of the EISs, according to the survey. Usually, this soft information is in the form of commentaries.

Most EIS software enables users to make annotations to displays, either directly or on accompanying screens. Many executives favor the on-screen approach because information is all in one spot.

Within this category, the most popular application of soft information is explanations. One manager says hard information, such as sales and shipments, provides no analysis. The hard data becomes useful only when others add text to explain why something was late or ahead of schedule.

At some firms, users can add personal comments and notes to explain any screen. In certain cases, however, these additions are not shared with others. They act as electronic Post-It notes, serving only as reminders for the executives.

The ability to scan news reports and have access to external news databases is available to 63% of the survey respondents. For one major oil company, the ability to monitor developments during the Persian Gulf war by watching CNN in a window on the screen led to several critical pricing and buying decisions.

Companies currently using external news databases are grappling with effective and efficient ways to scan and filter such information. They want to help executives avoid information overload.

Some companies rely on an external news service, such as Dow Jones News Retrieval, to work off predefined user profiles, automatically screening news and sending it to an executive. Other EISs depend on a separate department to review, filter and scan in interesting items. Still others have someone, typically a public relations department, prepare news summaries and enter them into the system.

Those who don't have news reports in their EIS say it is one of the first soft information items they would like to add.

Approximately 16% of the firms surveyed said they include opinions, feelings and ideas in their EISs, while 9% said they include rumors, gossip and hearsay. Typically the information is displayed as an electronic bulletin board accessible to all EIS users.

In one case, a manufacturing firm's executive entered a rumor about a customer's financial trouble, explaining that he thought the client might not be able to pay for a large order. This information resulted in a "slip" in the delivery schedule until the company could clearly establish that its customer could pay.

Not everyone buys in

Even with soft information's apparent benefits, in some instances, companies choose to minimize certain kinds of soft information by necessity. It might expose the firms to legal risk, it might be considered too sensitive, or it might compromise competitive plans.

A hospital EIS, for example, intentionally contains no soft information to explain reported mortality figures; the potential for a lawsuit is too great. Several companies are cautious about including human resources information about hiring/firing decisions because of Equal Employment Opportunity Commission and confidentiality concerns. Others protect executive steering committee reports, stating that the information is too sensitive.

One financial institution intentionally excludes rumors and gossip from its EIS, noting that executives are reluctant to make any remarks that might pinpoint them as gossips. In addition, other companies say they fear that displaying a rumor on a screen (in effect, "putting it in writing" and legitimizing it) could cause negative feedback and perceptions. Others worry about the security of sensitive or controversial information.

None of the companies currently including rumors and gossip in their EIS say they have run across such problems.

Worries such as these may fade as executives get used to having soft information in their EIS. In fact, as EISs become more mature, they tend to include more soft information. EIS managers say requests for soft information are increasing as executives discover that their EIS is capable of delivering it. In the study, there was a positive correlation between users' perceived value of the EIS and the amount and variety of soft information.

Those companies falling short in supporting the ways executives work and providing the information they need should come up to speed. They must create information sources and feeds that are new and different — access to external news databases, the ability to provide explanations and interpretations to screens and easy access for executives who want to share their thoughts.

It's not going to be easy: Support requirements may increase, given the extra effort required to add commentaries and opinions to hard data screens. But when soft data becomes a vital part of an EIS, it will enhance executives' ability to enter and access more meaningful soft information. The result is better decision-making based on a rich assortment of material. •

Watson is the C. Herman and Mary Virginia Terry Chair of Business Administration at the University of Georgia in Athens. Harp is a Ph.D. candidate in MIS at the school and has her own training consultancy. Kelly is a Ph.D. candidate in MIS and was previously a senior consultant at Andersen Consulting. O'Hara is a Ph.D. candidate in MIS and the former IS director at Averitt Express, a transportation company in Tennessee.

SOFT TALES

Useful information doesn't come only from surveys and financial numbers. Asking the right questions — even of strangers — can be very telling, as can reading pertinent articles.

Robert Hazard is chairman of the board at Choice Hotels International, Inc. in Silver Spring, Md., parent company of Quality Inns and Econolodge. He revolutionized the lodging industry in the 1980s with his concept of "market segmentation" — a three-tiered range of standardized rooms at various prices.

Hazard formed this breakthrough idea from front-line information gathering: interviewing a barber. While in Phoenix on business, Hazard struck up a conversation by asking, "So, where do you go on vacation?" He got an earful. In small towns, the barber stayed in moderately priced motels. He refused to pay more than $20 or $25 a night. But when he hit the big cities — Las Vegas or San Francisco — he always stayed in style; price wasn't a consideration.

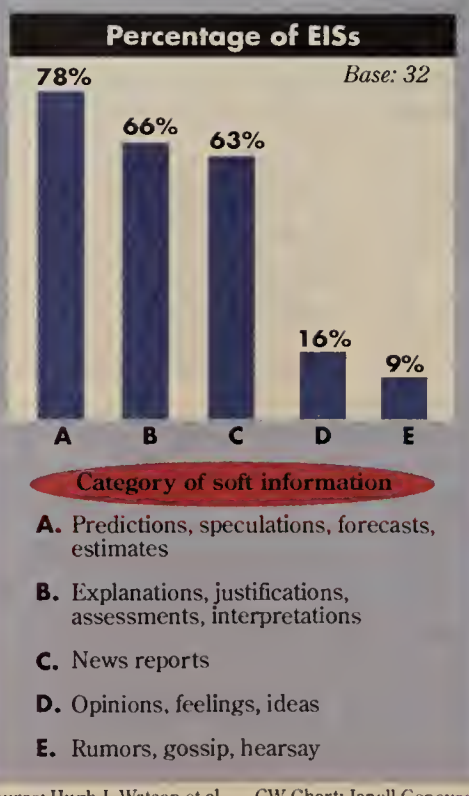
By leading with questions, Hazard obtained key information — information his formal marketing research hadn't revealed. "I get an outsider's view of my industry. That kind of information is invaluable."

Hazard keeps a small box labeled "lodging trends" on his desk. From his reading, he writes down pertinent information on index cards, which he reviews every evening after work. When he comes across an article he senses may be useful, he clips and files it. He and his team of executives constantly fire articles of interest back and forth with accompanying notes: "Hey, Jerry, did you see this? How does it relate to your area?" In this way, they share information.

Source: *Winning the Innovation Game* by Denis E. Waitley and Robert B. Tucker (Berkely Books).

What goes into EISs

The most popular forms of soft information in companies' EIS are predictions, speculations, forecasts and estimates



Source: Hugh J. Watson et al CW Chart: Janell Genovese

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A bunch of softies

Companies such as Pratt & Whitney, Conoco and Lockheed Aeronautical play hard with 'soft' data

BY LORY ZOTTOLA DIX

"EISs that have just financials and historical information in them are the ones that fail," says Walt Dempsey, manager of systems integration and customer support at Pratt & Whitney's Commercial Engine Business in East Hartford, Conn.

Dempsey, who oversees the company's 100-user EISs, isn't alone in his view. Other EIS professionals agree that an EIS gains value when it includes information such as suppositions, commentaries, outside reports and so on.

The types of "soft" information incorporated from company to company varies. Here's what three firms include on the softer, more context-enhancing side of the spectrum:

What distinguishes soft information?
Characteristics of hard and soft information

Characteristics	Hard	Soft
Perceived accuracy	High	Depends on source
Source	Machine-resident; often internal	Human; often external
Subject to interpretation	Generally accepted	Individually assessed
Timeliness	Historical	Current
Perceived value	Low	High
Availability	Regular	Ad hoc
Standardization	High	Low
Richness	Low	High
Existence	Generally known	Often unknown
Ownership	Generally available	Often tightly held
Lifetime	Long	Short
Communication channel	Formal	Informal

Source: Hugh J. Watson et al — CW Chart: Janell Genovese

SOFT TALES

Decision-making can be enriched by keen observation.

Frank Bettger, a star insurance salesman in the period after World War II (he made enough money by the age of 40 to retire), could deduce from a few clues what was going on around him.

He was lunching one day at Philadelphia's exclusive Union League Club when he noticed three men at a nearby table. He knew them: a father and son who were prominent industrialists in the community and their lawyer.

He went over to greet them and later that afternoon phoned the father to make an appointment. Within a few days, Bettger sold both father and son a very large insurance policy on their business.

How did Bettger know the men were discussing the reorganization of the company and that they were in the market for insurance? He had never called on them before.

"I could not know, of course, what exactly [they] were discussing, but when I see two partners having lunch with their lawyer, what is more obvious than that something is under way?"

Source: *The Book of Business Ancedotes* by Peter Hay (Facts on File).

Pratt & Whitney: Express yourself

Pratt & Whitney's EIS is very much geared to gathering as much information on competitors and customers as possible, Dempsey says. This helps in formulating business plans, landing new clients and servicing existing accounts.

The intelligence comes from people in the field, news reports and the executives themselves.

The aircraft engine company uses an internal filter group to collect and input external material for the 100 executive users.

Every executive has access to screens of "competitive highlights." These are weekly tallies of contracts won or lost vis-a-vis competitors. "For example, they might see we competed five times and won twice," Dempsey explains.

Additionally, competitive highlights include information such as news or a rumor that a competitor's chief executive officer is stepping down.

Customer profiles in the EIS are also heavily laden with soft information that might impact an executive's handling of an account. The executive identifies key issues at the customer site (say, a problematic engine), identifies a plan, puts together a schedule and adds any comments (perhaps noting that the spare parts delivery schedule could improve).

To encourage easy input of soft information by users, Dempsey and his team have dabbled with voice/data integration using the phone. The effort, dubbed "executive concern exchange," is based on the premise that top executives don't have time to type and feel more comfortable expressing their opinions, thoughts and concerns vocally.

"We felt we could do it through the phone, append what was said to the screen or graphic and distribute the information like E-mail, except it would come out of your EIS," he says. Until the cost of outfitting personal computers with voice boards comes down enough to enable this capability to be available on a widespread basis, however, the voice system remains in prototype.

Pratt & Whitney's EIS, which was first implemented in 1988, has become a showcase. Dempsey says the company gets visits from outside executives interested in the setup. It recently played host to Pitney Bowes, Inc.'s CEO and executive staff and a team of executives from General Motors Corp.

Lockheed Aeronautical Systems Co.: Tell it like it is

One of the granddaddies of all EIS systems, Lockheed's Management Information and Decision Support System has been in operation since 1979. While the system is currently getting a face-lift — it's moving off a mainframe and onto a server-based PC network — some things will stay the same.

"We wouldn't think of taking out the executives' ability to add comments to screens," says Frank Padula, financial system supervisor (a.k.a. EIS chief) at the aerospace company in Marietta, Ga. "The executives wouldn't let us."

Padula says that data preparation staff from the accounting and forecasting departments key in explanations and comments to hard financial data right on the screen. "The executives want to know why this went up, why this went down. They don't want to have to pick up the phone or call someone into the office to explain every report."

Conoco, Inc.: Staying in touch

"Successful senior executives have great intuition and vision. They assimilate a lot of information from lots of sources, primarily other members of the management team," says Lloyd Belcher, EIS manager at the Houston-based petroleum company. Belcher is concentrating on strengthening soft information exchange among his managers.

To that end, he has created an EIS application in which the company's approximately 45 key decision makers can post brief messages.

But Belcher wants to make it very clear that this is not a glorified electronic-mail function. "I don't want those messages mixed in with the other 30 messages they get per day. When they access these messages, they know they're from other senior management team members and contain ideas, plans or events considered extremely important."

The application got a workout during Hurricane Andrew, which threatened two of Conoco's facilities in the Gulf of Mexico. A plane flew over the sites, and the executive in charge of those facilities posted reports to the management team regarding the safety of personnel, any environmental impact and the condition of the rigs.

Although the evacuated employees, the environment and the equipment came through the storm fine, the immediacy of the information would have enabled a rapid emergency response, had one been necessary.

Belcher's future ideas for the 5-year-old PC system include on-screen comments as well as voice and full-motion video annotation. "We must have a closer match to the way executives work." •

The information continuum
Information ranges from very hard to very soft

Hard						Soft
Financial statements	News reports	Schedules	Explanations	Predictions	Opinions	Rumors
Statistics	Industry trends	Formal plans	Justifications	Speculations	Feelings	Gossip
Historical information	Survey data		Assessments	Forecasts	Ideas	Hearsay
			Interpretations	Estimates		

Source: Hugh J. Watson et al — CW Chart: Janell Genovese

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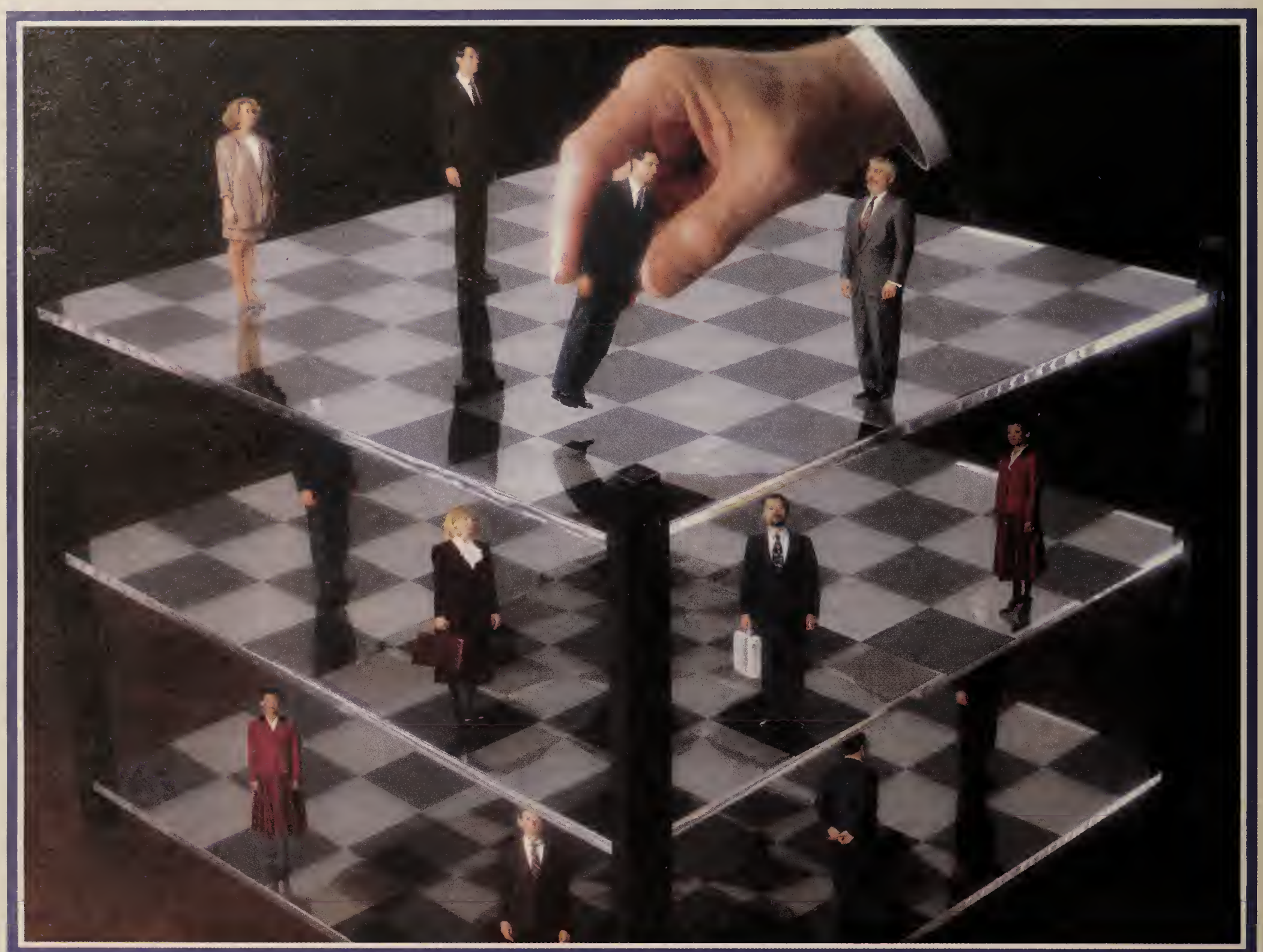

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IF IT Ain't Broke...

After decades of tight IS control, Baltimore Gas and Electric is moving toward letting users call some shots – but it's not rushing. Why? Because the traditional way works.

BY GARY H. ANTHES
CW STAFF

At Baltimore Gas and Electric Co., information systems are run by the book. Three books, actually: the Computing Architecture Plan, the Computing Policies Manual and the Computer Product Catalog.

The $2.5 billion utility's financial books are pretty strict, too. There are two entries for IS: a $30 million budget this year for operations and maintenance and a $30 million capital budget, all controlled by a central IS department.

Senior managers in the user departments cannot buy so much as their own personal computer software.

"If they do, the purchasing people will catch them," says Joseph E. Hunter Jr., manager of the IS department, known as ISD.

But while users complain about occasional red tape, they are surprisingly content — even grateful — to let ISD call the shots where information technology is concerned.

"ISD has virtually absolute control over hardware and software purchases," says S. Edward Hargest, manager of the economic research department, which has its own staff for maintaining PC applications developed by the department. "We have to go through them, and that sometimes causes delays that are hard to understand.

"But it's a good checks and balances system," Hargest adds. "My computer people would like a freer hand, but we can't be aware of all the things ISD knows. I think central oversight is necessary."

Such tight central control may seem a bit passe in an era of distributed computing and technologically empowered end users, but Hunter says the IS manuals — which are updated frequently, with user input — help keep ISD/user relations on an even keel (see story page 111). "We give them enough information to allow them to make business decisions and still stay within corporate standards," he says. "And it's understood that in some cases, exceptions [to IS policies] may have to be made."

AT A GLANCE

Baltimore Gas and Electric

1991 FINANCIALS
$2.5 billion in revenue;
$253 million profit

ASSETS
$7.1 billion

EMPLOYEES
9,000

IS
Staff of 341
1992 budget
of $62.9 million

SERVES
Baltimore and parts of nine central Maryland counties;
2,300 sq miles and 2.5 million residents

Even as central control of IS is widely supported at Baltimore Gas and Electric, the utility has for some time been moving toward a budgeting mechanism that puts user departments more in the IS driver's seat. In the new model, ISD retains control over IS policies, practices and procurements but encourages and helps users go to bat for their own pet projects.

"It used to be if we went to ISD and they didn't have the budget, they'd just tell us to wait until next year," says Gregory C. Martin, customer accounts department manager. It is his job to oversee the utility's largest and most mission-critical applications — those that support meter reading, billing, accounts receivable and service order processing for 1 million customers.

Now, according to Martin, if users can demonstrate a healthy return on investment for their projects, they can petition top management for a budget supplement.

For example, Martin says, ISD recently told him it lacked the funds to support one of his initiatives: a plan to automate the routing and scheduling of customer service representatives, for which he projected a one-year payback. But Martin did not give up. He worked with ISD to prepare a proposal to management, and the president approved it.

Katherine Lambert

Baltimore Gas and Electric's Hunter *says user departments at the utility will soon get their own small PC budgets, but IS will still review their purchases*

"It's a cooperative venture now," Martin says. "ISD looks to the user organization to justify and support the cost savings, but they supply the expert knowledge. This basically opens the door to decentralized budgeting."

Nevertheless, Martin sounds a caution: "I came from an IS background, so I'm comfortable taking on more IS responsibility," he says. "But some managers wouldn't be comfortable with that."

Indeed, managers in user departments at Baltimore Gas and Electric say they like having a central group dedicated to giving them service. "We're concerned as a corporation about letting everyone do their own thing," says Wayne G. Thompson, manager of the electric system engineering department. "If we just said, 'Let the good times roll,' we'd spend 16 times as much on [electrical and gas] distribution automation and get one-tenth as much out of it."

That concern notwithstanding, next year the utility will more formally recognize the user's right to choose. For the first time, user departments will get their own small IS budgets for PCs and peripherals and PC software. Their purchases will be executed — and scrutinized for compliance with the utility's three IS bibles — by ISD, Hunter says.

That will allow users to make some trade-offs between IS expenses and operating expenses, Hunter says.

In addition, users will be able to fund from their own operating budgets IS needs that come up during the year that were not included in the original ISD budget.

Eventually, Hunter says, users will get the whole IS budget except for infrastructure and cross-company projects such as the corporate network.

That will not sit well with all users, predicts Dale Kutnick, president of Meta Group, Inc., a Westport, Conn.-based firm that consults with two dozen utilities, including Baltimore Gas and Electric.

"For some, it's just an additional responsibility. It's much easier to just throw it over the transom and then complain to ISD when it's not getting done," Kutnick says.

Despite the effort to give users more say over IS outlays, a move to complete user autonomy is not in the cards, Hunter says. The corporate IS architecture, the policies, the standards, the approved products list — those will remain ISD property.

CW special survey

Marching Orders

An exclusive CW poll shows that aligning IS with the business mission is more important than ever. Here's what, how and who really matters, based on interviews with 108 CIOs.

BY NELL MARGOLIS
CW STAFF

Only recently, industry observers were poised to toss off re-engineering and total quality management (TQM) as buzzwordy fads, but the concepts are anything but, according to the findings of a recent *Computerworld* survey of 102 top information systems executives. To the contrary, TQM and the "R" word are emerging as the key strategies on which IS is aligning its priorities with those of the firm's business.

In fact, according to many survey respondents, business process re-engineering is quickly moving beyond the top agenda item to become the agenda itself.

"The dynamic business change currently taking place" at virtually every U.S.-based company "is coming to be *the* critical issue in IS," says John Herman, vice president of IS at Chicago-based retailer HartMarx Corp.

If re-engineering is the name of the game, TQM is the playbook, says Thomas Charbonneau, manager of corporate information services/business administration at Natick, Mass.-based Bose Corp. The IS department was in the vanguard of the audio equipment manufacturer's surge into TQM, Charbonneau says, "because it helps us identify who our clients are and what they're looking for."

In addition, he says, applying the rigorous TQM methodology ferrets out "weaknesses in serving them that have long been hidden under bushel baskets." In short, "it does for us with respect to our [internal] clients just what it does for them with respect to [their external] customers."

Decentralization and globalization are taking a relative backseat on the IS/business alignment bandwagon, several survey respondents said, not because they are unimportant but because they have been largely accomplished. Application downsizing may pale in the ratings because it is just beginning to take off.

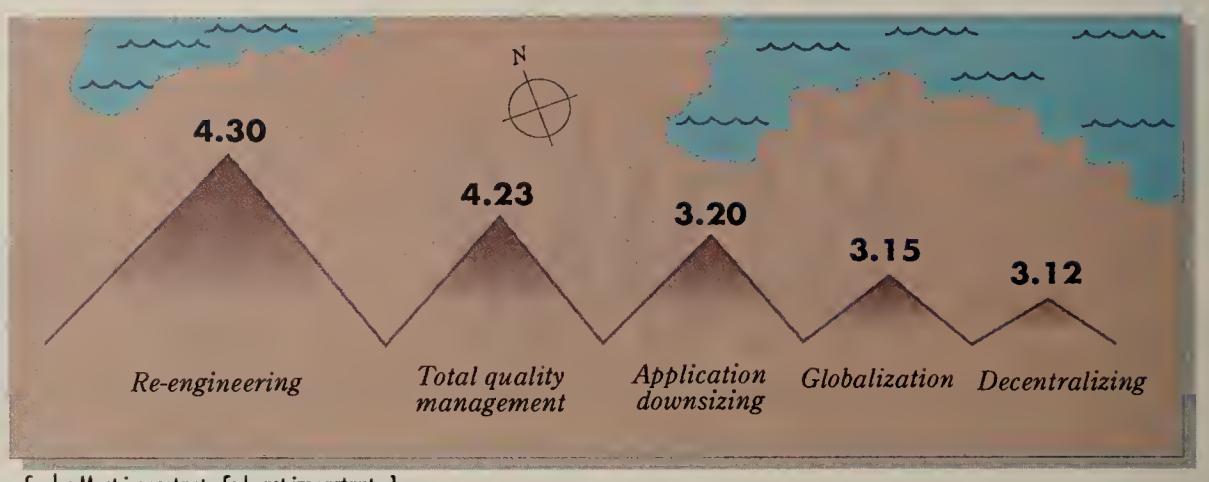
Of nine technologies frequently mentioned by the surveyed IS leaders, high-speed networking was targeted as the one most likely to impact their respective firms' business strategies during the next five years. Closing in on the network was client/server computing, followed closely by graphical user interfaces (see chart).

On the other hand, noted one IS director who asked not to be identified, discounting any technology as irrelevant to the cause of facilitating the business of the business is likely to be a mistake. "Even the so-called dinosaurs are still needed," he pointed out.

The IS team's new-age mission is still running into some age-old interference, many respondents reported. "For the past seven years, we've been trying to get management to listen to our ideas," said Pacific Telesis IS manager Rudy Crespo. "We're just beginning to get some good news."

The missions

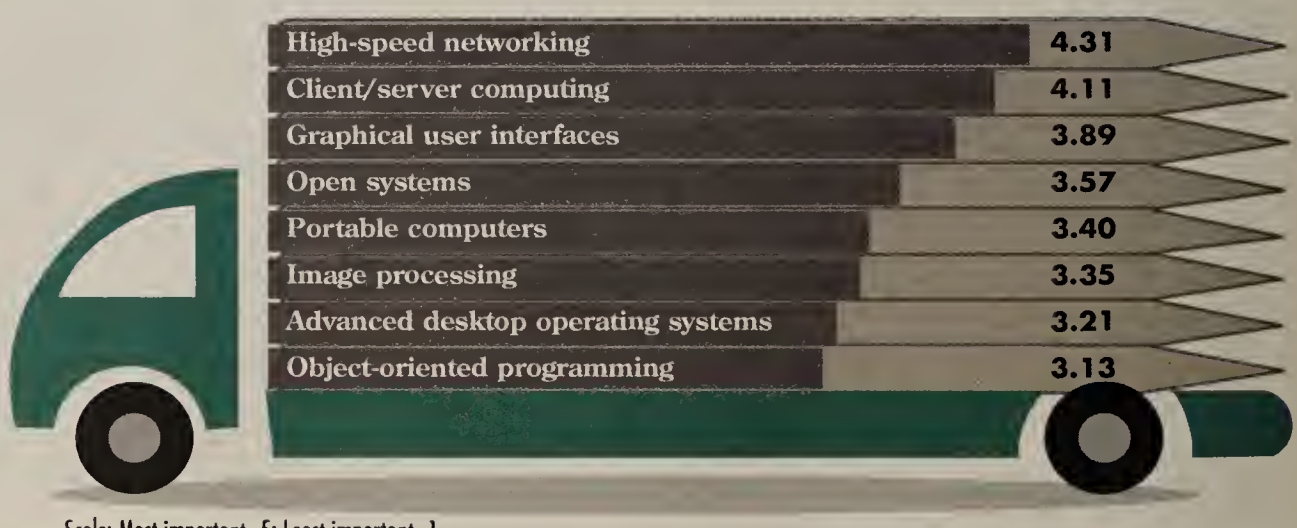
"Rate the importance of the following activities to your company's business strategy."



Scale: Most important=5; Least important=1

The weapons

"Rate the following technologies on expected degree of impact on your company's strategy over the next five years."



Scale: Most important=5; Least important=1

The troops

"How much do you agree or disagree with the following statements?"

Scale: Strongly agree=5; Strongly disagree=1

CW Chart: Janell Genovese

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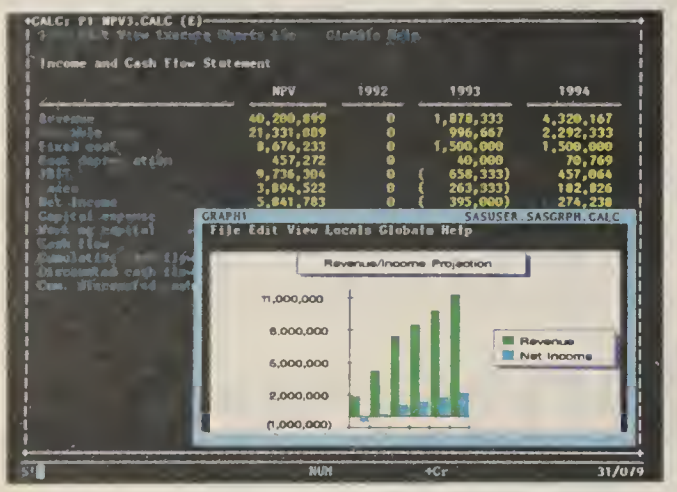
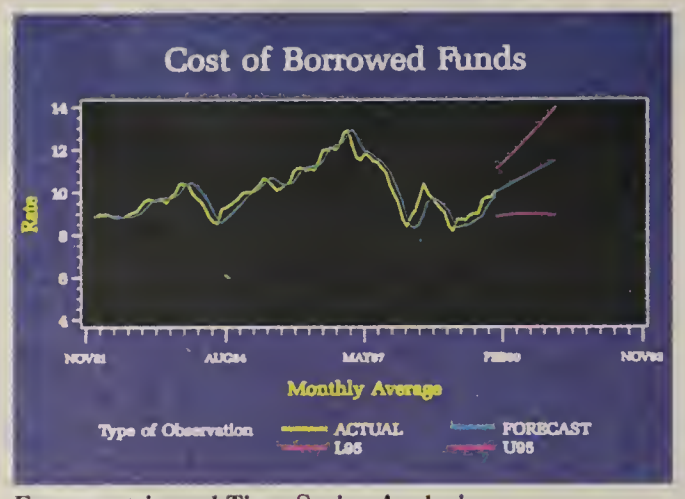
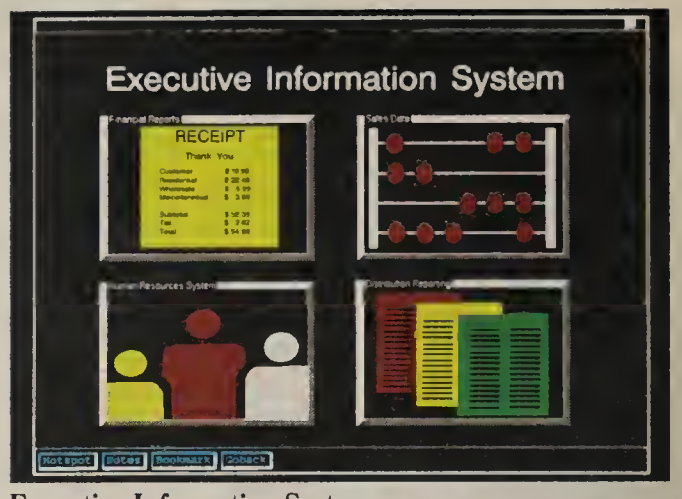


Financial Planning



Econometric and Time Series Analysis



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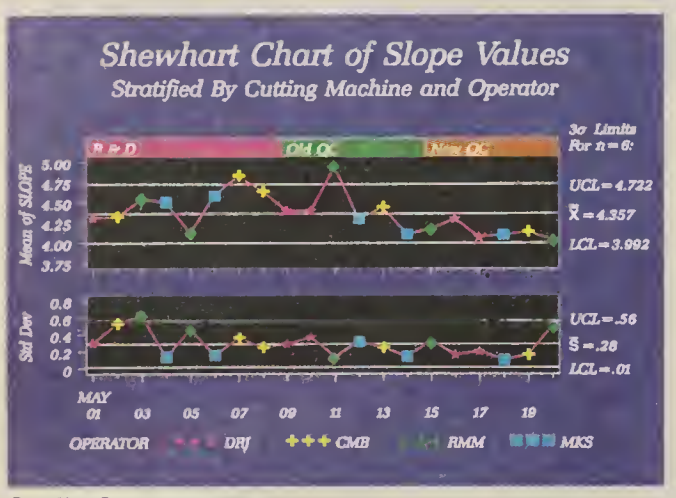

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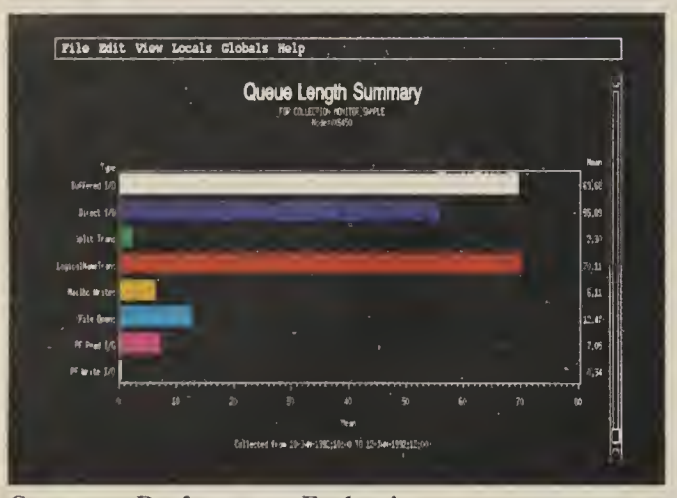

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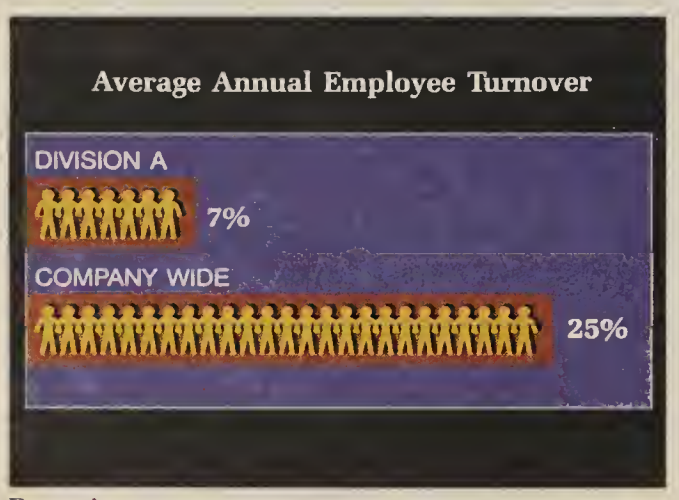
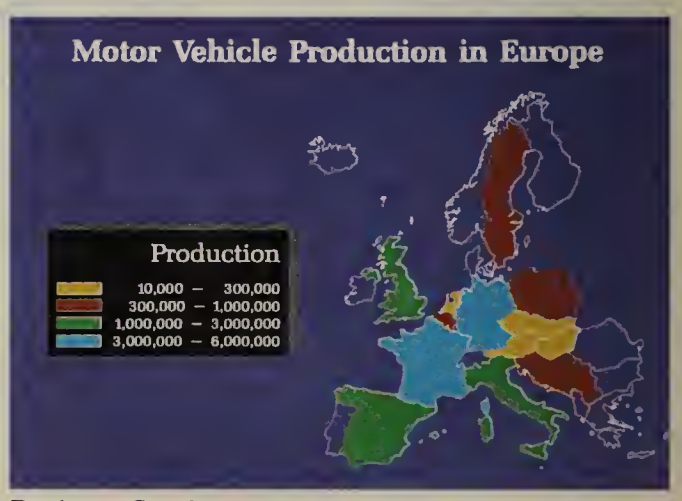
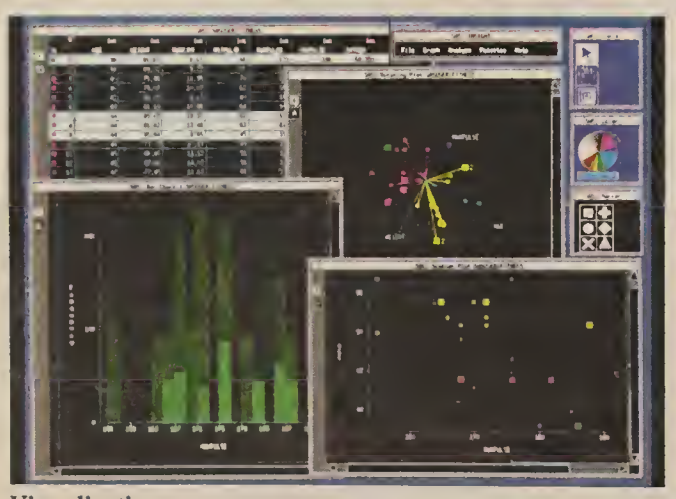


Reporting

Market Research



Business Graphs



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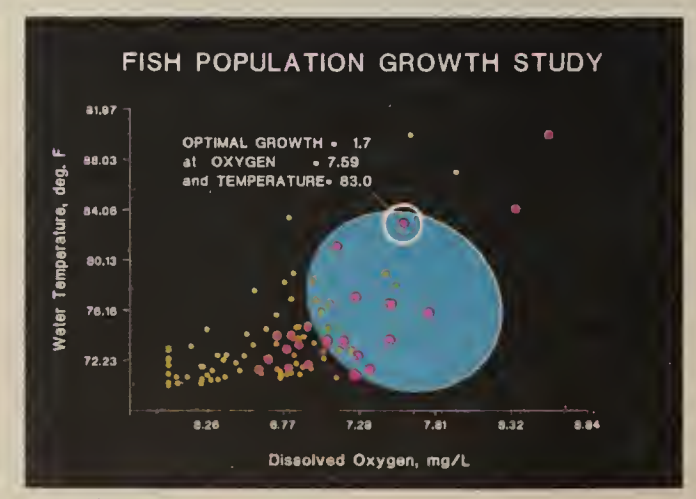

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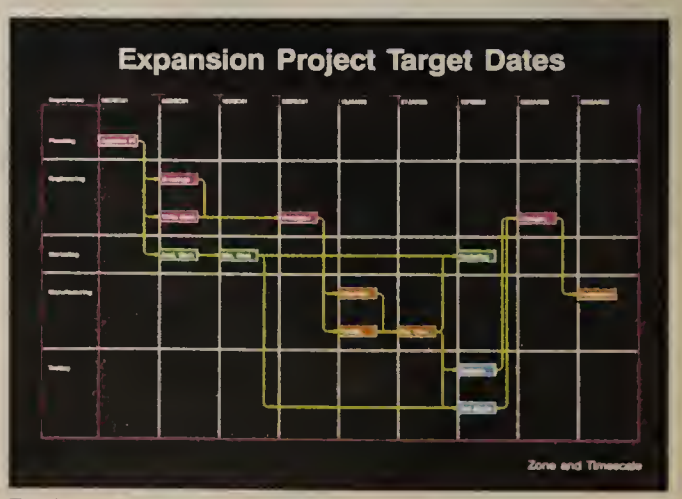


Project Management

Baltimore Gas' IS gospel

"What struck me years ago was that people were making big decisions without necessarily realizing they were big decisions," says Joseph E. Hunter Jr., information systems chief at Baltimore Gas and Electric. "We didn't have the context, the big picture."

Now they can look it up. A trio of manuals tells users and IS people that they must run new disks through a virus-check program, that the relational database management system from Oracle Corp. is the RDBMS of choice for midrange computers, that implementation plans should contain a data risk analysis and that the corporate data network shall not be subject to a single point of failure.

The Computing Architecture Plan is the strategic IS blueprint for the utility. It starts with a single fundamental tenet: that the company will move to "a fully distributed computing environment with all computer nodes integrated as cooperative peers using a standards-based corporate data network."

The plan then goes on to lay out supporting principles in three areas: data and information; applications; and infrastructure, including networks, hardware/software support and facilities. Some are motherhood-and-apple-pie — "data redundancy will be minimized" — and some are very specific — Method/1 from Andersen Consulting is the preferred development tool for PC applications.

THOSE WHO FIND a book on computer use policy a bit dull can view "Computing Policies Manual — The Movie": a humorous video narrated by an Albert Einstein look-alike from The Office of Smart Things to Do.

"Their planning is rigorous and well-documented, and they are constantly fine-tuning it," says Dale Kutnick, president of consulting firm Meta Group, Inc. "They are in the vanguard of utility companies."

The utility has found some unconventional uses for its Computing Architecture Plan: For instance, excerpts make their way into company requests for proposals. "It's so vendors won't bid what we're not interested in," Hunter explains.

The Computing Policies Manual is a user-oriented tactical document, developed and maintained jointly by the utility's central IS department, or ISD, and users. It covers application development, data security, physical security, acquisition, maintenance and modifications, legal/regulatory requirements and training.

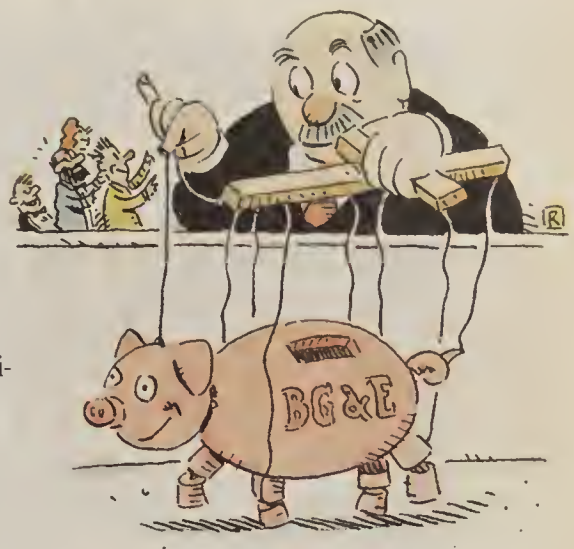
Those who find a book on computer use policy a bit dull can view "Computing Policies Manual — The Movie": a humorous, 14-minute video narrated by an Albert Einstein look-alike from The Office of Smart Things to Do.

"The manuals say what the central IS group will support," Hunter says. "But if [users] need to go outside of the manuals, we will help them make it work, usually by finding a contractor."

By all accounts, the manuals are widely used and respected at the utility. "As we get into more decentralized processing, unless we follow the policies and prescriptions, we're at risk of losing our investment," says Richard M. Bange, accounting department manager. "The more information becomes decentralized, the more important this is."

"If nothing else, the Computing Policies Manual brings up a lot of good questions. It's a good checklist for users," says Ken Thomas, principal engineer in the electric system engineering department. "It says, 'Hey, ISD is not doing everything for you anymore.'"

GARY H. ANTHES



Marc Rosenthal

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Lotus Notes

*PC Week, October 5, 1992 **J. Henry, P. Blum, E. Salloway, "The Impact of Lotus Notes on Productivity," 1992

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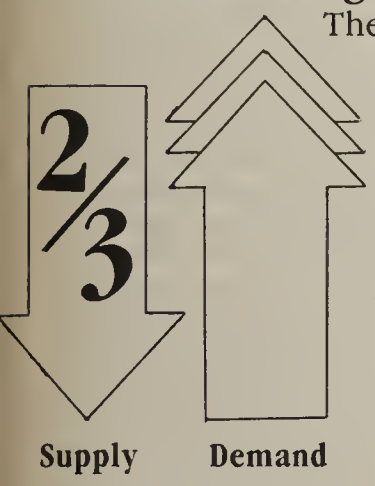
A few important tips on recruiting computer professionals

Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

What's more, many of today's recruiters *don't use* today's most efficient methods — methods that save time and money for some widely unknown reasons.

The supply of qualified professionals isn't meeting demand



The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business that require the skills of this shrinking market than ever before. And while you may never consider the company next door your competitor, it likely *is* competing for the same computer talent today. The result is a classic supply/demand problem that isn't changing for the better -and that's sure to make your recruiting tougher in the '90s.

Ads in local papers don't reach your major hiring market anymore

That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who would *consider* new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)

For every 10 of today's computer job seekers . . .
2 are Active ☐ ☐
7 are Passive ☐ ☐ ☐ ☐ ☐ ☐ ☐
1 is a Non-mover ☐

In short, this means that your ad in today's local newspaper reaches no more than 20 percent of today's computer job seekers. What's worse, if you're not using other vehicles that reach far more job seekers, your local newspaper expenses are as inefficient as their limited audience.

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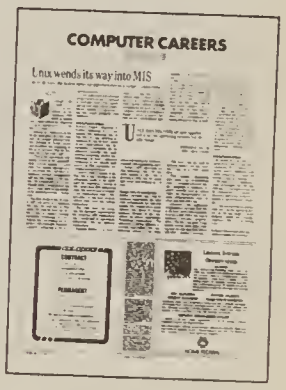

Just look at this week's Computer Careers section. You'll find a career editorial topic that will stir the interest of virtually any computer job seeker — passive *or* active. It's just one of countless reasons *Computerworld* is America's newspaper of choice on computing. No matter how much the times change.

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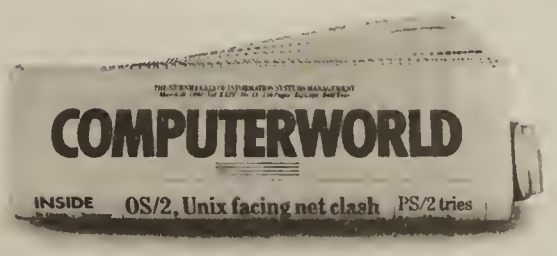

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What users want, expect from you

BY LESLIE GOFF
SPECIAL TO CW

Do you know what your end users say about you when you're not around? Well, we talked to a few — not a scientific sample, just a random handful — to find out how things are going out there on the information systems/user front. Don't worry, nothing unprintable was said. The comments weren't always glowing, but they won't singe your ears.

Overall, the end users we spoke with said they are fairly satisfied with the response of their IS staffs to day-to-day problems, but they wish IS staff members were more in tune with the criticality of unique departmental applications. On the other hand, users — especially those in larger companies — acknowledge that IS is under pressure from all directions and that resources can only be stretched so far.

Given that reality, users say they'd like to be able to do more for themselves and lean on IS for training and guidance but not for total sustenance. Not only would they be able to solve more problems, they say, but when they did need to request an enhancement or a new application, their requests would be better informed and more realistic.

For instance, at J. B. Hunt Transport Services in Lowell, Ark., Jeff Franco, senior vice president of marketing, said he would like his company's IS staff to be more involved in helping users understand the capabilities of their systems. "As users, we've had to try to recognize opportunities and make requests for changes to the system" that would have been easier for IS staff members, who are better aware of systemwide capabilities, to recognize from the outset.

'One-on-one'

The trucking company is rewriting major mainframe-based marketing and operations applications that Franco says will result in dramatic productivity increases. While IS support during the project has been good, Franco says he would like to have an IS staff member "come up here and sit with us and spend time watching the [current] application and the person who uses it, asking them things like, 'Why do you have to do that?' "

Although the users at J. B. Hunt understand that the IS staff has been under pressure with the inherent problems of phasing in a new application while still running the old one, they have been frustrated by the two years it's taken to rewrite the application, Franco says.

"The plans are clear, but the timetable isn't," Franco says, although completion of the project appears to be near.

Susan DeLuca, a librarian serving some 30 research analysts at The Meta Group, Inc., a Westport, Conn.-based consulting firm, has other frustrations. While IS staff members do help her, they often aren't able to provide her with solutions. DeLuca's function is so dependent on computers that she has three IBM-compatible personal computers and another about to be delivered, an Apple Computer, Inc. Macintosh, two compact disc/read-only memory devices, a modem and subscriptions to myriad on-line services.

Despite the investment in her department, the three-person IS staff doesn't seem to understand how critical the library is to the firm's business of generating and disseminating information.

Typical of her dilemma is the fact that her modem and fax machine share the same phone line; if she dials into an on-line service such as Dialog and a fax starts to come through, she gets thrown off-line. "They say it's too much money to put another line in," she says. "They don't understand how much I need both."

Even though the IS staff is helpful with questions about companywide software, when a technical problem arises with specific departmental software, DeLuca says she goes directly to the vendor. "I place a call to IS first because I don't want to step on toes, but they don't call back or don't know, and the vendor knows exactly what's going on," she says.

Troubleshooting

At The Washington Post Co. in Washington, D.C., which owns the *Washington Post*, *Newsweek* and Stanley H. Kaplan Educational Centers, the IS staff's expert troubleshooting capabilities saved the day for Kathy Kraus, treasury assistant.

Not only did IS provide her with a critical application that enables her to automatically retrieve deposit data from all of the firm's banks twice every morning, but when problems occur, she is able to quickly assess whether fault lies with the local-area network, the modem, the bank or the host network.

"That's critical because if I don't have the numbers, we have no idea how much money we've got to invest and it's millions of dollars a day," Kraus says.

IS has made troubleshooting a priority, she adds, because it recognizes how essential the application is. Kraus also has an IS person who is assigned to sit in her department and observe day-to-day operations. Consequently, Kraus is getting a customized database and report generator.

Is there such a thing as a user with no complaints at all? Not really. Even the happiest user can find something to improve. Cynthia Durham, manager of the Kansas City, Mo., office of GoGo Tours, a division of Ramsey, N.J.-based LibGo Travel, says her IS staff is nearly perfect. Her only wish is for less system downtime. The company's record? Three systemwide outages in the eight years she's worked there.

"I'd like them to have a forewarning system," she says. "I'd like them to put a message out over the system when a particular program isn't working. They do that 50% of the time, but if they could do it the other 50%, it could save us a lot of aggravation and them a lot of time."

Goff is a New York-based free-lance writer.

What makes users happy

- Being allowed to do more for themselves, with information systems supplying training and guidance.
- Having an IS staff that is available to assist with troubleshooting and is interested in answering questions.
- Having an IS person either stationed in the department or in regular contact to observe day-to-day operations and work processes.

What makes users mad

- When IS staff members aren't in tune with the criticality of unique departmental applications.
- When the IS staff doesn't warn users of system downtime.
- When it takes IS two years to implement a new application.

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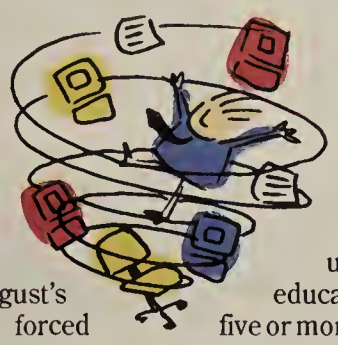
JOB CLOSE-UP

Disaster recovery managers: Prepared for unexpected

BY KATHLEEN A. GOW
SPECIAL TO CW

Disaster recovery manager: It has a heroic ring to it. Sometimes people in this position are called on to perform heroic feats, but mostly they spend their time putting out small fires and trying to ensure that, even if all hell does break loose, their company's operations won't falter.



This is a big job. It's particularly daunting when something like a hurricane or a flood hits.

For example, August's Hurricane Andrew forced Bruce Johnston at Levitz Furniture Corp. in Boca Raton, Fla., to put his firm's disaster recovery plan to the test when one of the company's warehouses was hit.

And Judith Spencer at the Chicago Board of Trade Clearing Corp. spent four days camped at the board's hot site, making sure the board's disaster recovery plan worked as planned when a broken water main caused a flood in April (see story at right).

But even on an average day, a disaster recovery manager has to juggle many complex tasks.

At MCA Universal Studios, Inc. in Universal City, Calif., the disaster recovery manager grew up with CICS and MVS and has experience as a high-level data center manager. This kind of experience is necessary, says George Brenner, director of corporate information services and a vice president at Universal, because a disaster recovery manager must be skilled at handling negotiations with vendors and internal groups and be knowledgeable about data center requirements.

"They need to make sure that scripts get rehearsed, that audit processes are followed, that we can do tests with disaster recovery vendors, that deals are made with off-site storage sites and that they are accessible and maintainable," Brenner says.

Disaster recovery managers usually have various educational degrees and five or more years' experience doing disaster recovery planning, auditing or contingency planning. If they come from the technical side, they are usually from the data center or computer operations, says Geoffrey H. Wold, national director of information systems and technology consulting at the accounting and consulting firm of McGladrey & Pullen in the Minneapolis/St. Paul area.

Those from the business side were most often involved in business operations, such as an assistant plant manager or supervisor at a manufacturer, Wold says.

What it takes

Not all companies demand extensive technical knowledge, but most do demand strong communication skills.

Good writing skills are almost a necessity — not only to write and update the disaster recovery plan but also to document it correctly so it will be read and used, Wold says.

Disaster recovery managers also need heavy project management skills, along with a good working knowledge of how vital applications interrelate, says Fred Luevano, manager of systems management at Northrup Corp. in Hawthorne, Calif.

Salaries for disaster recovery managers vary widely, based on the size of the disaster recovery operation, the industry and whether the disaster recovery role is dedicated or part of a broader job responsibility.

Titles vary as widely. Of the 148 conference attendees who responded to *Disaster Recovery Journal*'s survey at the fall 1991 Disaster Recovery Symposium in Atlanta, most listed their titles as disaster recovery planner or coordinator, with salaries of $50,000 to $60,000.

The next most mentioned title was disaster or business recovery manager, with salaries of $70,000 to $80,000.

Disaster recovery managers say there is still no advancement track for the position. Depending on the company and the individual's skills, managers can move into operations, security or applications areas at their companies.

But pay and advancement aren't the whole story for many.

Take Joe Spence, data security administrator at the Dade County School Board in Miami. Even though Hurricane Andrew hit six miles south of his data center's bunker-like building, Spence says the center would have been ready even if the hurricane had hit head-on because the center sends daily backups to an off-site storage facility 15 to 20 miles away.

"You hope you never have to implement your disaster recovery plan," Spence says. But he says he gets great satisfaction knowing he's prepared.

Gow is a free-lance writer based in Medford, Mass.

Earning those combat stripes

When disasters strike, disaster recovery managers need to be prepared to act quickly. When a Chicago water main broke April 13, taking out electricity at the Chicago Board of Trade Clearing Corp. (CBOT), Judith Spencer had less than an hour to pull her company's disaster recovery plan together. In that time, her job as manager of quality assurance was to get people and tapes out of the building, schedule work shifts and transport staff to the hot-site facility of Sungard Recovery Services, Inc. in Northbrook, Ill.

"My role as coordinator was to get communications established right away and keep people up to date on decisions being made," Spencer says. With the exchange floor closed, the only way for board-of-trade members to reach CBOT was to call the hot site. So Spencer set up a communication desk of roughly a dozen phones at the hot site and scheduled staff to answer them.

"In the midst of a disaster, all you do is coordinate," Spencer says. "You get data flowing, book transportation and hotels, make sure people have food around the clock. I had to keep track of all people at all times because you never knew when you would need extra people. We utilized just about everyone we had.

"All new development stops, so we used applications programmers to do things like set up terminal links and administrative assistants or people from accounting to assist in data entry. We gave some crash courses, for instance, on trade entry for member firms and customers."

Spencer hired limos to deliver reports to board-of-trade firms and chartered helicopters and planes. She and a few others were up around the clock for about three days before making it home to change their clothes. "It was a once-in-a-lifetime opportunity to see how well our planning pulled together," Spencer says. "The executives were panicked, but the people who had been testing on a regular basis were calm."

KATHLEEN A. GOW

Instrument Scientist. Responsible for developing algorithms for analysis and visualization of multivariate data; will investigate new methods for analyzing spectrophotometric data derived from inhomogeneous material, designing and implementing algorithms based on these methods, programming in FORTRAN or "C" on the UNIX-based Titan mini-supercomputer. Responsible for building an integrated data analysis system based on successful algorithms, and developing software for visualizing spectrophotometric data and the results of data analysis on individual workstations. Analyzes spectrophotometric data and helps to interpret the results; and assists in the design of pre-clinical spectrophotometric experiments. Ph.D. in Electrical Engineering and 6 months experience as Instrument Scientist or 6 months experience as Research Assistant required. Previous research experience must have involved developing an iterative learning restoration neural net process, analytical sign/data processing algorithms development and mathematical analysis as well as pattern recognition techniques and statistical characterization of data systems, as well as the set up, maintenance and use of mini-computers with UNIX operating system, X windows graphical interface system, C and FORTRAN programming languages. Applicants must have completed one college-level course in each of the following: 1. Fourier Optics 2. Digital Signal Processing 3. Introductory Stochastic Signs & Systems 4. Statistical Optics and Optical Communications 5. Signal Reconstruction and 6. Pattern Recognition. 40 hours, 8:15 a.m. to 4:55 p.m., $5,000 per month. Must have proof of legal authority to work permanently in the U.S. Send resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Arlene Thrower, Reference #V-IL-5892-T. NO CALLS. AN EMPLOYER PAID AD - SEND 2 COPIES OF RESUME.

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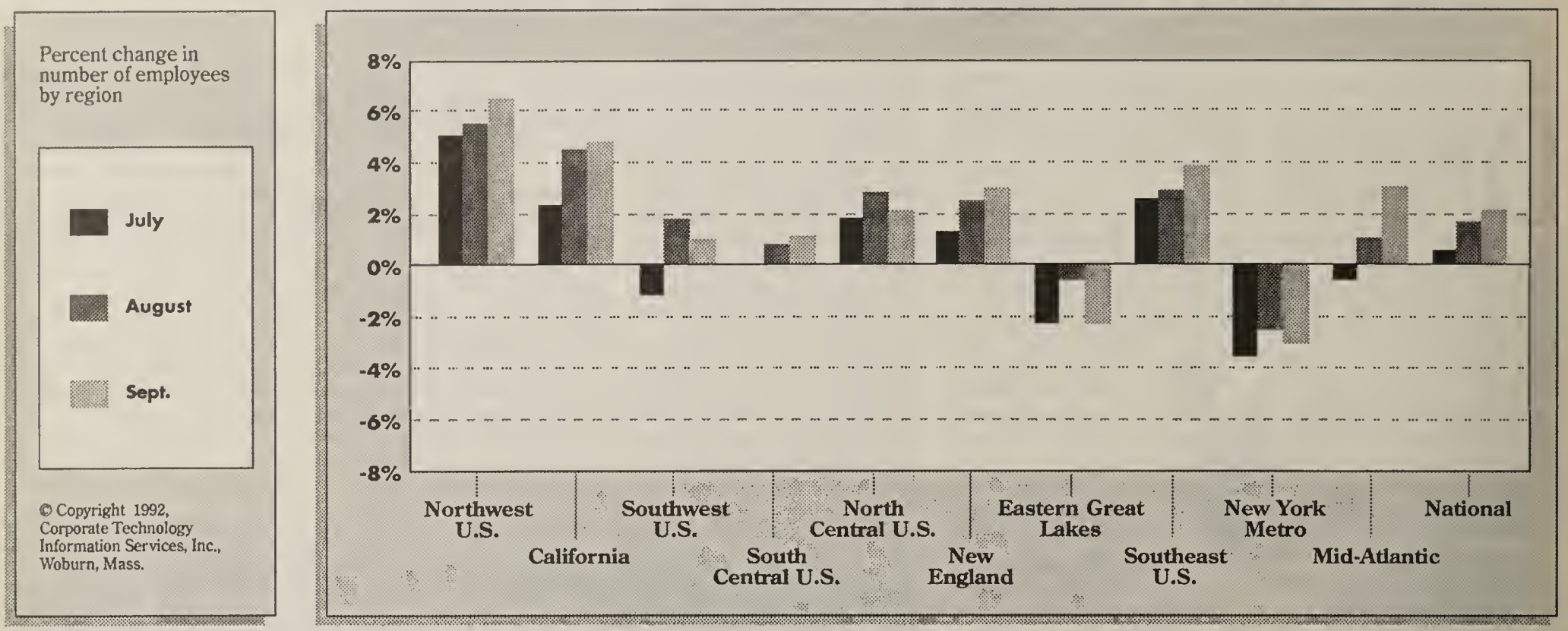
Computerworld/Corptech Career Index

Employment in small technology manufacturers rose 6.4% in the Northwest and dropped 3.1% in the New York area in September



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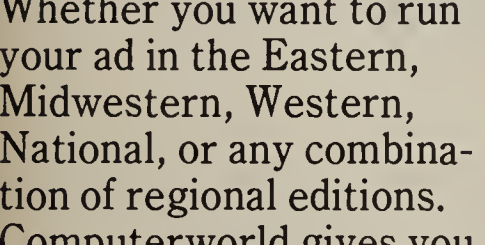

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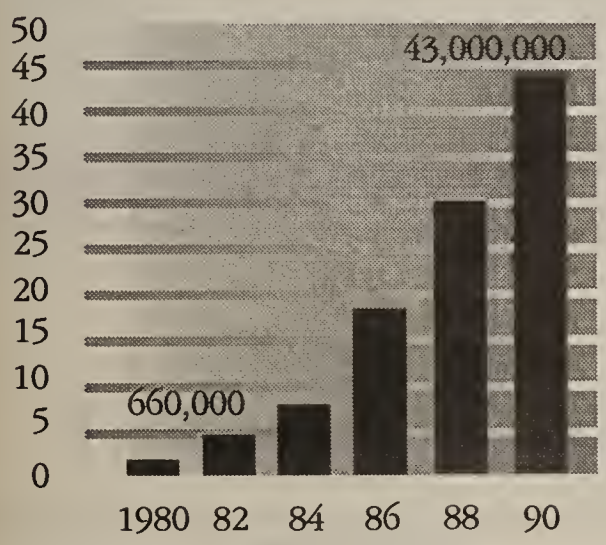

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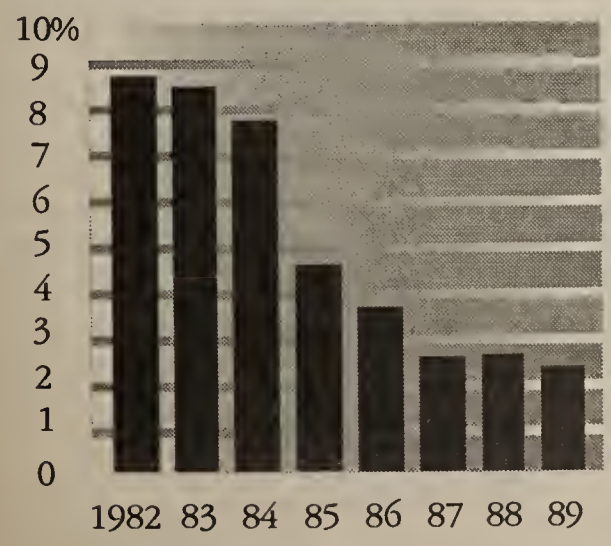

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To beta-test or not to beta-test

BY RANDALL KENNEDY
SPECIAL TO CW

It is hard to resist a sneak preview, especially if the early knowledge might gain you a strategic edge. That's probably why more and more information systems shops are tempted to beta-test unreleased products — to get a taste of the new technology and check out systems compatibilities.

But for as many advantages as beta testing offers, it's not just a look-and-run venture. Anyone who volunteers his shop for a testing ground should know that he is about to launch a project that's not only time-consuming but can be fraught with frustrations as bugs are encountered and slowly isolated and corrected. Just ask those brave souls who have already jumped on the beta-test bandwagon. There's a lot to learn!

So let the beta-buyer beware when testing the waters. And remember, a little common sense goes a long way.

DO

➤ **Make frequent backups of your data.**

It sounds obvious, but many sites don't make backups. This is even more critical when testing new operating system software. Because of their low-level system functions, operating systems can completely obliterate a mass-storage device's contents. So don't take any chances.

➤ **Isolate beta-test software from production installations of shipping software.**

Beta-test software often features an upgrade mechanism for bringing older versions of the software up to date. Using this to upgrade production applications can only invite disaster. Instead, install the software in an isolated manner.

➤ **Stay in contact with the beta-test program coordinators.**

Most vendors administer their beta-test programs through an electronic data network such as CompuServe. Through these forums, sites can exchange electronic mail, download bug fixes and new software revisions and receive support from the development team.

Program coordinators also post programwide announcements about critical bugs and new developments. Most vendors pay for these (Microsoft Corp. does in its beta-test forums), so don't miss critical announcements. Check in weekly.

DON'T

➤ **Intermix beta-test software from multiple vendors.**

One of the quickest ways to lock up a system and lose data is to mix beta-test software from different vendors. This makes it difficult to diagnose and isolate errors. For example, during the beta testing of Microsoft's Windows 3.1, many users mixed beta-test memory managers and the prerelease Windows code, often with disastrous results.

➤ **Assume that features you see in the prerelease product will make it into the shipping version.**

If a feature set is not a fundamental part of the product's architecture, don't count on its being implemented exactly as it is in the prerelease code. This applies more to large-scale testing of first-generation products but can be equally valid in lesser testing programs as well.

➤ **Make performance evaluations based on prerelease software.**

Beta-test software is usually filled with debugging code, which slows down performance. So wait for the final code before making performance evaluations. Vendors often include disclaimers, but a number of testers still complain about performance in early beta-test code.

➤ **Talk about the software outside of your company.**

Many beta testers don't realize that the nondisclosure agreements they sign are legal and binding. Even mentioning your participation in a program can be considered a violation.

Kennedy is vice president of service at MicroServ Corp., a consulting firm in Hyannis, Mass. He can be reached via CompuServe at 76437,1041.

FOR BEGINNERS ONLY

You are seriously thinking about doing some beta testing but aren't sure of the implications. Before jumping in, ask yourself these questions:

➤ **Do you have considerable time to spend on the project?** Beta testing requires a commitment that goes beyond just installing the software. Vendors often want prerelease software tested in a production environment, which requires considerable time and effort as bugs and incompatibilities are navigated.

➤ **Do you have the hardware and software to support the prerelease product?** It makes little sense for a user with a stand-alone system to beta-test network software. Testing in the wrong environment also compromises data integrity.

➤ **Are you prepared to learn about the internal workings of the prerelease product?** Most beta-test installations do not go smoothly, and vendors often ask the tester to manually edit system configuration files, expand and copy program files from disks and even apply debug patches to executable code.

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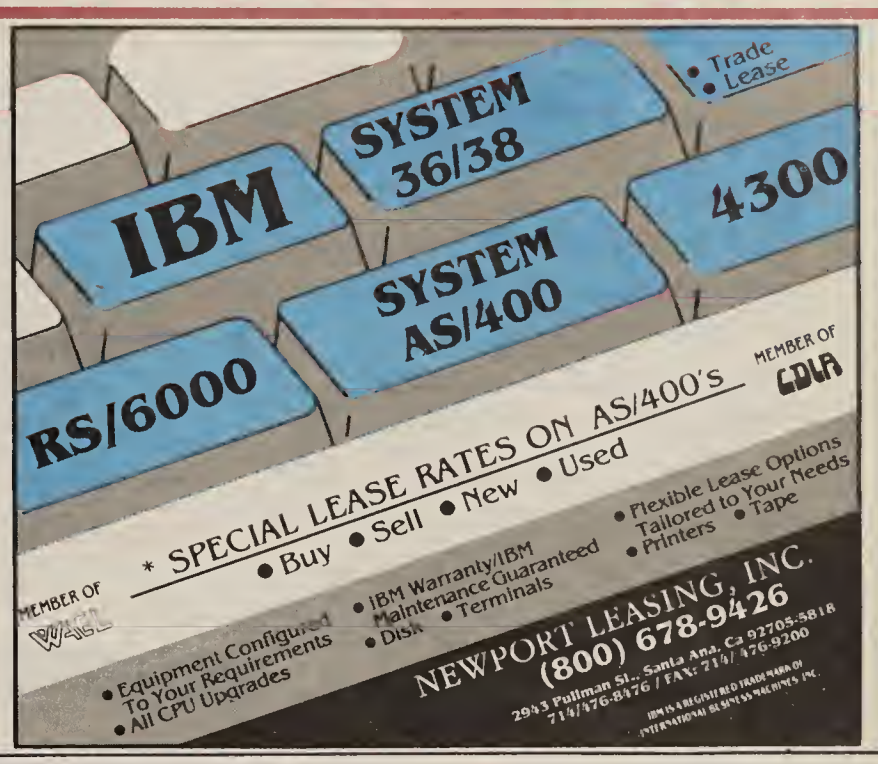

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The BoCoEx index on used computers

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PS/2 Model L40SX	$1,000	$1,200	$900
PS/2 Model 55SX	$850	$900	$800
PS/2 Model 60	$600	$900	$325
PS/2 Model P70	$1,650	$1,900	$1,200
PS/2 Model 80	$1,200	$1,400	$900
PS/2 Model 90	$3,100	$3,500	$2,700
Compaq Portable II	$445	$500	$375
Portable III	$500	$600	$250
Portable 386	$950	$1,100	$800
SLT-286	$700	$900	$400
LTE-286	$800	$900	$500
Deskpro 386s	$900	$1,000	$700
Deskpro 386/33	$1,700	$1,950	$1,400
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SE	$725	$775	$500
IIX	$2,450	$2,750	$2,000
IICI	$2,800	$3,200	$2,460
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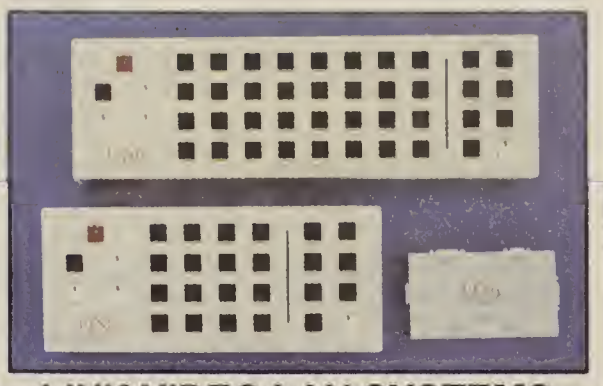

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Industry Almanac

WINDOWS TRANSITION

Industry watchers say the fast acceptance of Microsoft Corp.'s Windows environment has buoyed the financial fortunes of some personal computer software vendors but left others struggling to catch up.

MICROGRAFX, INC. (MGXI)

Will Fastie and Karen B. Gage
Alex. Brown & Sons, Inc.
Oct. 1, 1992

Micrografx is well-positioned to take advantage of the continuing surge of Windows use. The firm offers no DOS-based products and thus will not be burdened by the declining sales associated with applications on that platform. Micrografx also benefits from the rapid growth of desktop processing power, as souped-up PCs can handle the needs of graphic-intensive programs more easily.

➤ Investment conclusion: BUY

SYMANTEC CORP. (SYMC)

Gibbs Moody and David M. Thomas
Prudential Securities, Inc.
Oct. 8, 1992

Symantec has announced that results for the quarter just concluded — and for the next two quarters — will yield an operating loss. Approximately 65% of Symantec's revenue comes from DOS-based software, and new competition for the company's Windows products may emerge from Central Point Software, Inc. Revenue from current and upcoming Windows products should begin to offset declining DOS sales by the middle of fiscal 1994.

➤ Investment conclusion: HOLD

SOFTWARE PUBLISHING CORP. (SPCO)

Will Fastie and Karen B. Gage
Alex. Brown & Sons
Oct. 15, 1992

Harvard Graphics is the top gun among presentation graphics programs for DOS, but it faces heavy competition as users migrate to Windows. Software Publishing's shortfall in revenue for the fourth fiscal quarter is attributed directly to this pressure. Furthermore, Software Publishing's more entrenched Windows product, Superbase IV, faces pressure from upcoming Windows products from Microsoft, Borland International, Inc. and others. Prospects may improve as the company refocuses its marketing on Windows.

➤ Investment conclusion: NEUTRAL

DEREK SLATER

CLOSING PRICES FRIDAY, OCTOBER 16, 1992

TOP PERCENT GAINERS

Symantec Corp. (L)	42.00
Cray Computer	38.10
Corporate Software	36.84
Picturetel Corp.	35.85
Compression Labs Inc.	31.25
Seagate Technology*	28.57
State of the Art	25.00
Pyramid Technology (L)	22.22

TOP PERCENT LOSERS

Everex Systems Inc.	-37.47
Micrografx Inc.	-17.50
Spinnaker Software	-15.38
Printronix Inc.	-13.64
Meca Software	-13.04
Cray Research Inc.* (L)	-11.60
Sequoia Systems Inc.	-10.00
Micropolis Corp.	-9.86

TOP DOLLAR GAINERS

Synoptics Communications (H)	6.00
Dell Computer Corp. (H)	5.63
Apple Computer Inc.*	5.63
Wellfleet Communications	5.38
Picturetel Corp.	4.75
BMC Software Inc.	4.63
Parametric Technology	4.50
Matsushita Electronics	4.25

TOP DOLLAR LOSERS

IBM*	-7.63
Intel Corp.*	-3.25
Cray Research Inc.* (L)	-2.63
Micrografx Inc.	-1.75
Chipcom Corp.	-1.63
Digital Equipment Corp.*	-1.38
Xilinx (L)	-1.25
Scientific Atlanta Inc.	-1.25

Exch	52-Week			Oct. 16 Close	Wk Net Change	Wk Pct Change
Communications and Network Services			**Up 4.58%**			
OTC	19.13	9.38	3 COM Corp.* (H)	17.88	-0.75	-4.03
NYS	70.63	56.25	American Info Techs Corp.*	68.63	2.63	3.98
NYS	45.38	32.88	AT&T*	42.25	0.50	1.20
OTC	4.25	0.75	Artel Communication Corp.	1.25	0.13	11.11
NYS	49.75	40.25	Bell Atlantic Corp.	47.75	1.50	3.24
NYS	55.50	43.38	Bellsouth Corp.	52.63	1.13	2.18
NYS	6.75	3.63	Bolt, Beranek & Newman (L)	3.88	0.13	3.33
NYS	66.63	36.63	Cabletron Systems	66.63	4.13	6.60
OTC	31.00	17.50	Chipcom Corp.	24.63	-1.63	-6.19
OTC	56.88	21.38	Cisco Systems Inc.	56.88	2.88	5.32
OTC	35.25	5.50	Compression Labs Inc.	7.88	1.88	31.25
OTC	3.38	0.88	Data Switch Corp.	1.69	0.06	3.88
NYS	23.63	14.00	Digital Comm. Assoc.*	14.00	-0.75	-5.08
OTC	15.25	7.75	Digital Systems Int'l Inc.(L)	8.50	0.25	3.03
OTC	13.63	3.63	DSC Communications	13.63	1.50	12.37
OTC	10.88	4.75	Fibronix Int'l Inc.	5.75	-0.25	-4.17
OTC	37.50	10.50	Filenet Corp.	16.25	1.25	8.33
OTC	3.38	1.13	Gandalf Technologies Inc.	1.88	0.00	0.00
OTC	2.25	0.69	Gateway Communications	1.63	-0.06	-3.73
NYS	5.50	2.38	General Datacomm Inds.	4.13	0.50	13.79
ASE	5.88	0.50	Go Video	2.31	0.06	2.80
NYS	35.75	28.88	GTE Corp.*	34.38	0.88	2.61
NYS	70.63	50.00	ITT Corp.	65.75	1.13	1.74
OTC	36.25	25.25	MCI Commmunications Corp.	35.75	0.88	2.51
OTC	14.50	2.25	Microcom Inc.	3.00	-0.25	-7.69
NYS	18.25	9.50	Network Equipment Tech.*	13.50	0.63	4.85
OTC	25.50	8.00	Network General	14.50	0.25	1.75
OTC	20.00	8.50	Network Systems Corp.	12.75	1.63	14.61
OTC	22.75	5.63	Newbridge Networks Corp. (H)	22.75	2.50	12.35
NYS	49.25	30.50	Northern Telecom Ltd.*	31.00	0.25	0.81
OTC	32.50	21.25	Novell Inc. (s)*	29.63	1.25	4.41
NYS	88.38	69.13	Nynex Corp.*	85.25	2.88	3.49
OTC	37.50	15.00	Octel Communications Corp.(L)	19.00	1.13	6.29
OTC	9.88	3.75	Penril Data Comm. Ntwks. (L)	3.75	-0.25	-6.25
OTC	53.00	10.25	Picturetel Corp.	18.00	4.75	35.85
OTC	18.75	7.50	Proteon Inc. (L)	9.50	-0.13	-1.30
NYS	29.50	13.38	Scientific Atlanta Inc.	27.50	-1.25	-4.35
NYS	69.13	55.75	Southwestern Bell Corp. (H)	68.75	2.25	3.38
NYS	26.38	20.75	Sprint Corp.	24.50	0.75	3.16
OTC	19.50	4.50	Standard Microsystems Corp(H)	18.63	0.50	2.76
OTC	57.50	14.50	Synoptics Communications (H)	57.50	6.00	11.65
NYS	40.00	32.88	US West Inc.	39.00	1.13	2.97
OTC	49.88	24.00	Wellfleet Communications	49.88	5.38	12.08
PC and Workstations			**Up 2.98%**			
OTC	13.75	3.50	Advanced Logic Research	4.00	0.00	0.00
OTC	70.00	42.75	Apple Computer Inc.*	49.00	5.63	12.97
OTC	27.00	11.25	AST Research Inc.*	16.50	1.63	10.92
NYS	19.25	6.75	Commodore Int'l	7.50	0.50	7.14
NYS	38.75	22.13	Compaq Computer Corp.* (H)	38.75	2.25	6.16
OTC	33.63	13.91	Dell Computer Corp. (H)	33.63	5.63	20.09
OTC	7.75	0.94	Everex Systems Inc.	0.94	-0.56	-37.47
NYS	34.00	21.25	Harris Corp.	30.63	0.63	2.08
NYS	85.00	44.63	Hewlett-Packard Co.*	55.88	4.25	8.23
NYS	29.75	14.13	Silicon Graphics	20.75	2.13	11.41
OTC	35.88	20.75	Sun Microsystems Inc.*	29.00	1.25	4.50
NYS	31.25	22.25	Tandy Corp.*	26.75	0.63	2.39
NYS	11.13	5.50	Zenith Electronics	5.75	0.00	0.00
OTC	25.50	2.75	Zeos International Ltd.	3.50	-0.25	-6.67
Large Systems			**Up 5.23%**			
ASE	20.63	7.75	Amdahl Corp.* (L)	7.88	0.13	1.61
NYS	16.38	4.75	Convex Computer (L)	6.00	1.00	20.00
OTC	19.63	1.88	Cray Computer	3.63	1.00	38.10
NYS	52.25	20.00	Cray Research Inc.* (L)	20.00	-2.63	-11.60
NYS	22.50	7.13	Data General Corp.	12.25	1.25	11.36
NYS	65.50	33.25	Digital Equipment Corp.*	34.38	-1.38	-3.85
NYS	101.38	70.75	IBM*	70.75	-7.63	-9.73
OTC	13.25	5.50	Kendall Square Research (L)	7.13	0.88	14.00
NYS	119.25	88.25	Matsushita Electronics	94.75	4.25	4.70
OTC	17.50	6.00	Pyramid Technology (L)	8.25	1.50	22.22
OTC	17.88	9.88	Sequent Computer Sys.	15.50	-0.13	-0.80
OTC	18.38	2.75	Sequoia Systems Inc.	3.38	-0.38	-10.00
NYS	54.25	34.50	Stratus Computer Inc.*	37.00	1.13	3.14
NYS	15.13	9.50	Tandem Computers Inc.*	11.63	0.50	4.49
NYS	11.75	3.63	Unisys Corp.*	8.75	0.00	0.00
ASE	7.50	0.25	Wang Labs Inc. (b)*	0.44	0.00	0.00
Software			**Up 3.55%**			
OTC	68.50	25.25	Adobe Systems Inc. (L)	28.63	2.38	9.05
OTC	44.25	10.25	Aldus Corp. (L)	13.25	1.63	13.98
OTC	19.75	7.88	American Software Inc.	7.88	-0.75	-8.70
OTC	20.00	9.75	Ask Computer Systems	13.63	0.50	3.81
OTC	50.75	23.25	Autodesk Inc.	50.50	2.25	4.66
OTC	37.75	4.13	Bachman Info. Systems	4.13	-0.13	-2.94
OTC	42.50	32.00	BGS Systems Inc.	37.50	0.00	0.00
OTC	79.00	37.25	BMC Software Inc.	60.25	4.63	8.31
OTC	20.50	10.25	Boole & Babbage	19.00	-0.50	-2.56
OTC	86.75	25.25	Borland Int'l Inc.* (L)	29.00	1.13	4.04
OTC	11.00	3.63	CE Software	3.88	-0.13	-3.13
ASE	21.75	8.66	Cheyenne Software Inc. (H)	21.75	1.75	8.75
OTC	17.00	5.63	Cognos Inc.	5.75	0.13	2.22
NYS	17.00	8.00	Computer Associates*	16.88	1.25	8.00
NYS	12.38	5.00	Computervision Corp.	5.13	-0.50	-8.89
OTC	20.00	6.75	Comshare Inc.	7.75	-0.25	-3.13
OTC	6.50	3.25	Easel Corp. (L)	6.50	-0.63	-8.77
OTC	25.00	11.50	Group I Software	14.00	1.00	7.69
OTC	6.63	3.50	Hogan Systems Inc.	4.75	0.25	5.56
OTC	36.25	18.50	Information Resources	27.25	1.50	5.83
OTC	27.25	4.75	Informix Corp. (H)	27.25	3.13	12.95
OTC	22.38	11.50	Intergraph Corp. (L)	13.25	1.25	10.42
OTC	15.00	7.00	Interleaf Inc.	10.63	1.25	13.33
OTC	20.25	10.25	Intersolv Inc.	13.75	-0.50	-3.51
OTC	21.38	9.50	Knowledgeware Inc.	10.50	-0.13	-1.18
OTC	48.25	28.75	Legent Corp.*	45.00	2.50	5.88
OTC	38.75	15.50	Lotus Development*	17.50	0.75	4.48
OTC	7.38	1.88	Meca Software	2.50	-0.38	-13.04
OTC	22.25	5.25	Mentor Graphics	6.13	0.38	6.52
OTC	37.25	27.25	Micro Focus	36.00	0.38	1.05
OTC	20.50	6.50	Micrografx Inc.	8.25	-1.75	-17.50
OTC	88.84	58.50	Microsoft Corp.*	85.38	3.00	3.64
OTC	21.13	12.00	Oracle Corp.*	20.63	1.63	8.55
OTC	50.75	18.38	Parametric Technology	50.75	4.50	9.73
OTC	11.00	3.50	Phoenix Technologies	4.38	0.13	2.94
OTC	25.25	11.25	Platinum Technology	16.25	2.00	14.04
OTC	49.00	29.00	Progress Software Corp.	46.50	-0.50	-1.06
OTC	26.63	4.00	Quarterdeck Office Sys.	5.00	0.38	8.11
OTC	32.75	11.75	Rainbow Technologies Inc.	20.50	0.25	1.23
OTC	22.75	4.00	Rasterops	6.25	0.75	13.64
OTC	17.25	5.00	Ross Systems	6.00	-0.38	-5.88
OTC	12.25	8.50	Sapiens USA Inc.	10.88	0.25	2.35
OTC	26.25	6.75	Software Publishing Corp.	7.50	0.00	0.00
OTC	8.50	2.00	Software Toolworks Inc.	3.44	0.19	5.78
OTC	7.25	1.00	Spinnaker Software	1.38	-0.25	-15.38
OTC	16.50	3.25	State of the Art	5.00	1.00	25.00
NYS	25.25	13.75	Sterling Software Inc.	18.38	0.13	0.68
OTC	30.00	8.00	Struct. Dynamics Research (L)	10.00	1.75	21.21
OTC	38.00	16.25	Sybase Inc.	38.00	1.63	4.47
OTC	51.00	5.88	Symantec Corp. (L)	8.88	2.63	42.00
NYS	15.50	5.25	Systems Center Inc.*	6.25	-0.25	-3.85
OTC	34.25	13.00	System Software Assoc.	21.88	-0.13	-0.57
OTC	13.25	2.50	Trinzic Corp.	3.88	-0.38	-8.82
OTC	23.75	14.50	Walker Interactive Systems	16.38	-0.63	-3.68
OTC	6.63	1.50	Wordstar	1.75	0.13	7.69
Semiconductors			**Up 2.98%**			
NYS	21.50	7.38	Advanced Micro Devices	13.00	1.25	10.64
NYS	11.13	7.13	Analog Devices Inc.	10.25	-0.13	-1.20
OTC	12.38	6.75	Atmel Corp.	12.38	0.25	2.06
OTC	14.13	3.25	Chips and Technologies	3.75	0.25	7.14
NYS	21.50	7.38	Cypress Semiconductor Corp	8.38	-0.13	-1.47
NYS	12.88	6.38	Dallas Semiconductor (H)	12.00	0.13	1.05
OTC	68.75	39.75	Intel Corp.*	63.25	-3.25	-4.89
NYS	9.88	4.88	LSI Logic Corp.	6.50	0.50	8.33
NYS	22.38	12.13	Micron Technology	18.00	1.75	10.77
NYS	94.13	57.50	Motorola Inc.*	94.13	4.13	4.58
NYS	12.38	4.88	National Semiconductor*	12.13	-0.13	-1.02
OTC	27.00	8.25	Sierra Semiconductor	11.50	-1.00	-8.00
NYS	45.50	26.00	Texas Instruments* (H)	45.00	1.13	2.56
OTC	10.50	6.00	VLSI Technology	7.25	0.13	1.75
OTC	7.25	2.13	Weitek	3.50	0.38	12.00
ASE	6.38	2.00	Western Digital Corp. (H)	6.38	0.38	6.25
OTC	31.00	16.00	Xilinx (L)	16.00	-1.25	-7.25
OTC	32.75	13.75	Zilog Inc. (H)	32.00	3.00	10.34
Peripherals and Subsystems			**Up 4.38%**			
OTC	10.00	3.25	Archive Corp.	7.13	0.38	5.56
OTC	26.75	13.75	Banctec Inc.	24.00	-0.75	-3.03
OTC	23.50	10.00	Cambex Corp.	10.25	-0.50	-4.65
ASE	13.00	5.41	Cognitronics Corp. (H)	13.00	1.38	11.83
NYS	23.88	12.50	Conner Peripherals*	21.75	2.88	15.23
OTC	15.50	14.50	DATA RACE Inc.	15.25	-0.25	-1.61
ASE	19.66	4.66	Dataram Corp.	5.88	0.50	9.30
NYS	22.25	8.25	EMC Corp.	22.25	2.00	9.88
OTC	8.38	4.75	Emulex Corp.	5.50	0.13	2.33
OTC	23.00	13.25	Evans & Sutherland	14.50	-0.13	-0.85
OTC	40.63	12.00	Exabyte	16.13	1.13	7.50
OTC	29.50	15.75	Intelligent Info. Systems	28.88	0.50	1.76
OTC	11.25	4.75	Iomega Corp.	6.38	0.25	4.08
OTC	15.25	12.25	IPL Systems Inc. (L)	13.50	0.25	1.89
OTC	21.25	10.75	Komag Inc.	18.25	3.00	19.67
OTC	15.25	4.38	Maxtor Corp.*	14.13	0.13	0.89
OTC	12.63	6.38	Micropolis Corp.	8.00	-0.88	-9.86
NYS	103.75	85.38	3M Co.	98.88	1.00	1.02
OTC	6.75	3.50	Printronix Inc.	4.75	-0.75	-13.64
NYS	26.75	6.88	OMS Inc.	7.88	0.13	1.61
OTC	18.00	8.88	Quantum Corp.	14.88	1.88	14.42
OTC	12.75	3.75	Radius Inc.	5.00	-0.13	-2.44
NYS	12.88	6.50	Recognition Equipment	10.00	0.38	3.90
OTC	13.13	5.63	Rexon Inc.	11.13	0.75	7.23
OTC	17.63	7.50	Seagate Technology*	15.75	3.50	28.57
NYS	78.00	21.50	Storage Technology*	24.63	1.88	8.24
NYS	24.25	16.00	Tektronix Inc.	20.50	0.25	1.23
NYS	82.25	60.25	Xerox Corp.	78.38	1.88	2.45
Services			**Up 4.57%**			
OTC	20.38	11.66	American Mgmt. Systems* (H)	20.13	0.38	1.90
NYS	5.38	2.88	Anacomp Inc.	3.75	0.63	20.00
OTC	19.75	12.50	Analysts Int'l	19.75	2.00	11.27
NYS	49.00	35.75	Auto Data Processing*	46.13	0.38	0.82
NYS	15.50	7.06	Ceridian Corp.	14.88	0.88	6.25
NYS	24.16	12.50	Comdisco Inc.*	15.13	-0.50	-3.20
OTC	13.50	7.13	Computer Horizons (L)	7.75	-0.38	-4.62
NYS	84.88	57.00	Computer Sciences*	68.25	1.50	2.25
NYS	10.13	7.00	Computer Task Group	7.88	-0.13	-1.56
OTC	40.50	15.00	CompUSA Inc.	34.75	2.50	7.75
OTC	19.25	6.00	Corporate Software	9.75	2.63	36.84
OTC	30.75	8.00	Egghead Discount Software	8.00	-0.25	-3.03
NYS	33.06	25.25	General Motors E (EDS)*	29.38	-0.13	-0.42
OTC	30.38	6.25	Intelligent Electronics	12.00	1.25	11.63
OTC	14.88	5.88	Merisel	8.00	0.38	4.92
OTC	15.75	7.00	Microage Inc.	9.00	1.25	16.13
OTC	33.50	17.66	Paychex (H)	33.50	2.25	7.20
NYS	76.50	54.00	Policy Management Sys.	73.50	0.00	0.00
NYS	44.75	26.13	Reynolds and Reynolds	42.25	0.25	0.60
OTC	32.00	21.25	SEI Corp.	24.63	-0.25	-1.01
OTC	24.38	16.88	Shared Medical Systems	21.38	-0.25	-1.16
OTC	30.00	15.50	Sungard Data Systems	27.25	0.25	0.93
NYS	3.63	1.13	Ultimate Corp.	1.38	-0.13	-8.33

KEY: (H) = New annual high (L) = New annual low

* Companies tracked in Computerworld Stock Index

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IN BRIEF

Intel enjoys strong Q3, I486 sales

■ Citing strong I486 sales, **Intel Corp.** last week reported third-quarter net earnings of $241 million, up 19% from the year earlier period. Revenue increased 20% to $1.43 billion. I486 sales exceeded 80386 sales for the first time, the Santa Clara, Calif., company said.

■ Reacting to a slowdown in demand for its 5995M IBM-compatible mainframe, **Amdahl Corp.** will reduce its 9,700-member work force by 9%, effective next month. The $1.7 billion Sunnyvale, Calif., company expects to post a one-time charge of more than $15 million in the third quarter ended Sept. 27. Last month, the company said it would report a loss for its fiscal third quarter. The firm's results will be disclosed tomorrow.

■ **Wellfleet Communications, Inc.** reported fiscal first-quarter earnings of $4.9 million, an increase of 44% from the comparable period last year. Revenue rose 54% to $32.7 million, the Bedford, Mass., company said.

■ Following its disclosure of an expected fourth-quarter loss, **Advanced Logic Research, Inc.** last week said it will lay off approximately 15% of its worldwide work force. The Irvine, Calif., firm will also impose salary reductions ranging from 5% to 30% for all employees making more than $50,000.

■ **Central Point Software, Inc.** in Beaverton, Ore., said it has raised $17.85 million in private financing, including $8.5 million from Legent Corp. in Vienna, Va. A spokesman at Legent said the companies will exchange technical information, enabling Legent to "get closer to the shrink-wrap desktop" market, a business segment that Legent has "not yet entered."

DEC, IBM post poor financial showing

BY JOHANNA AMBROSIO
and MELINDA-CAROL BALLOU
CW STAFF

The computer industry's two largest vendors, Digital Equipment Corp. and IBM, last week reported lower than expected results for their most recent quarters as both struggle to re-engineer their businesses.

Wall Street reacted negatively to IBM's financials (see chart), as the company's stock price slid from $78 to $73 the day of the announcement. "I was surprised," said Sam Albert, a consultant in Scarsdale, N.Y. "The results were not as strong as I thought they would be."

IBM Chairman John Akers said in a prepared statement that he was "disappointed" with the results and that business was hurt by "economic turmoil" in Europe, as well as "economic weakness" in the U.S. and Japan. Hardware profits, especially in the personal computer line, were hit by price pressures, he added.

Nor is IBM out of the woods yet. Although the company has completed the lion's share of its restructuring with its breakup into 14 lines of business, IBM's success in 1993 will depend largely on how well it executes its new business strategy and on the economy, analysts said.

DEC pointed to continuing weakness in the global economy for its fiscal first-quarter loss of $260 million (see chart). Analysts had expected a quarterly loss of $150 million to $250 million.

"I think [this loss] implies that Bob Palmer's got his work cut out for him," noted John Jones, a senior analyst at Salomon Brothers, Inc. in San Francisco, in reference to DEC's new chief.

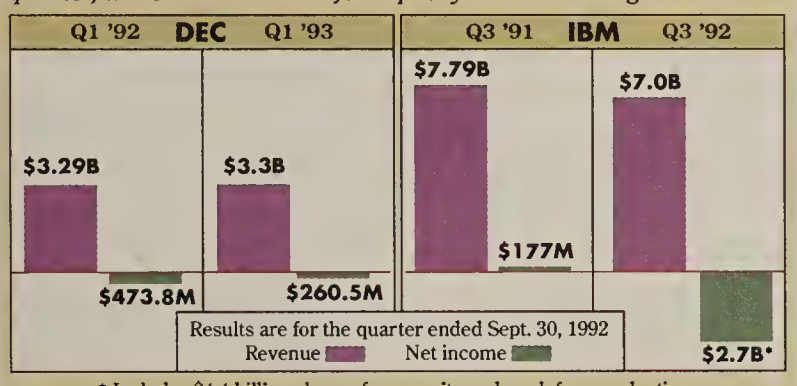
Company officials, however, were cautiously optimistic that the firm's ongoing cost-cutting would pay dividends by the second half of the fiscal year.

"The restructuring actions and expense reductions have not yet yielded the return to profitability that we're working on, but we expect progress in that direction in the next few quarters," said Bill Steul, vice president of finance at DEC. And Wall Street seemed to react favorably to a clearer statement by DEC officials about plans to downsize: DEC shares rose $1\frac{3}{8}$ on $37\frac{1}{8}$ on consolidated New York Stock Exchange volume of 751,200.

DEC's restructuring included a decline in the employee population by 5,300 — 4,300 were laid off, while 1,000 positions were cut by attrition, he said. The rate of the "involuntary separations" will increase during the next few quarters as the firm seeks to prune its ranks by an additional 20,000, said Jack Smith, senior vice president of operations.

The officials were also cautious in their assessment of the effect DEC's upcoming Alpha line would have on revenue growth. Though the erosion of VAX sales has now been stemmed via the Alpha-ready program, according to Smith, actual revenue increases from new Alpha product introductions are expected to "click in during the next fiscal year."

Black and blue
DEC's net income continued to be below expectations in the first quarter, while IBM took a hit for capacity-reduction charges



* Includes $4.4 billion charge for capacity and work force reductions

Sources: DEC and IBM

Microsoft's Windows edge pays big dividend

BY CHRISTOPHER LINDQUIST
CW STAFF

Last week's quarterly reports from Microsoft Corp. and software rival Borland International, Inc. make it clear, analysts said, that Microsoft's dominance in the Windows market is paying off handsomely, while Borland struggles to catch up because of its later entry into the market.

Microsoft reported net income of $209 million, a 45% increase over the same quarter last year. Borland, meanwhile, posted a net income of $5.4 million, compared with a net loss of $103 million in the same quarter last year because of a $110 million charge from its acquisition of Ashton-Tate Corp. (see chart).

Analysts said Microsoft has continued to demonstrate that it can make hay even while the sun is not shining on the software industry. Microsoft's early investment in its Windows technology continues to pay healthy dividends as users move to that platform and find Microsoft applications ready to buy.

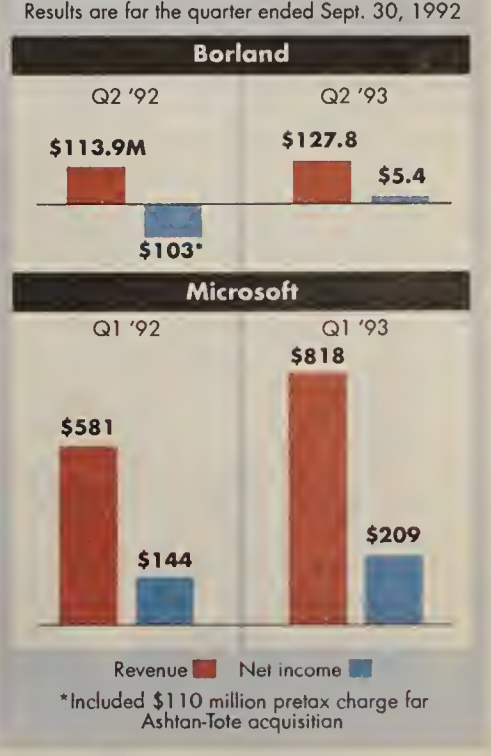
Ahead of the field

Gibbs Moody, an analyst at Prudential Securities, Inc., noted that some 70% of installed personal computers are not truly Windows-capable machines, and as such, Microsoft may still have considerable breathing room in that market.

Borland, on the other hand, is still trying to get some seeds planted. With the DOS market dwindling and its Windows applications slow to move out the door (see story at left), Borland has some catching up to do. "This really is a critical juncture for [Borland]," said Will Fastie, an analyst at Alex. Brown & Sons, Inc. He noted that while the recent release of Quattro Pro for Windows will help the company, if rumors of slippage in Paradox for Windows' scheduled year-end ship date prove true, they could negate any improvements.

Meanwhile, Borland's loss could be Microsoft's gain as it seeks to ship its own Windows database, Access, about the time of Comdex/Fall '92 next month.

Quarterly contest
Despite its competitive product positioning, Borland's revenue and net income are not growing nearly as fast as Microsoft's



Source: Borland and Microsoft

Off to a slow start

The long-awaited Quattro Pro for Windows has shipped, but early indications are that it may fall slightly short of the "best-of-breed" goal Borland had set for the product. A recent review in *Infoworld* placed it a close second behind Microsoft's Excel and Lotus' forthcoming 1-2-3 for Windows Release 2.0, which is reported to be much improved and will feature "Chronicle," the first workgroup technology built into an application.

In addition, while sales have been good, according to Borland, recent reports from Wall Street analysts indicated that they may not be as good as expected. "Initial orders have been OK," said David Weiss, director of advanced technology at Merisel/Softsel Computers, a large reseller. But it "certainly did not have the kind of initial impact that something like Excel did."

Borland said analysts were prematurely knocking Quattro Pro for Windows, noting the product entered the distribution channel only three weeks ago.

CHRISTOPHER LINDQUIST

DASD sales

Average number of months since last DASD acquisition: **12.5**

According to respondents:

- More than two-thirds of the sites have acquired DASD within the past year.
- More than 50% of the acquisitions reported were second-hand devices.
- Most DASD is purchased from either the manufacturer or from a broker.

DASD sales by IBM and plug-compatible mainframe (PCM) suppliers

	Units		
	1990	1991	1992
IBM	470	833	1,338
HDS	10	253	239
Amdahl	128	55	122
Storage Tek	23	25	87
Memorex Telex	12	29	55
Comparex	–	29	43
EMC	13	13	35

Acquisition methods for PCM and IBM DASD

	Percentage of sites	
	All IBM	All PCM
Bought from broker	39%	12%
Bought from manufacturer	26%	58%
Operating lease from other lessor	19%	24%
Operating lease from IBM Credit	8%	0%
Finance lease from other lessor	4%	6%
Finance lease from IBM Credit	4%	0%

Average DASD discount

1991	1992
24%	28%

Base: 597 U.S. mainframe sites and 315 international sites

Source: Xephon/WPWS, Oviedo, Fla.

Stephanie Faucher

The 5th Wave

"I WISH SOMEONE WOULD EXPLAIN TO PROFESSOR JONES THAT YOU DON'T NEED A WHIP AND A LEATHER JACKET TO FIND A LOST FILE."

INSIDE LINES

Not on deck — yet

➤ DEC is expected this week to disclose drastic overhauls of its business practices that will result in price reductions of about 45% for a range of products, including imaging and video, printers, networking and storage, according to sources close to the company. Volume discounts and fixed pricing are expected to be part of the announcement.

Advisory moves

➤ IBM this week will formally launch a unit designed to provide a single point of contact for IBM consulting services clients. IBM Consulting Group will be headed up by Bob Howe, who joined Big Blue from Booz Allen & Hamilton last year.

Sharing the RISC

➤ Hewlett-Packard next week will launch a client/server solutions program that will enlist two integrators — Computer Sciences and Science Applications International — to help implement enterprisewide client/server gear from HP and other vendors. HP intends to provide users with pretested, preloaded hardware and software through a single provider. The program includes 35 products revolving around a PA-RISC server and supports clients running MS-DOS, Windows, New Wave and Macintosh System 7.0.

Clearing the smoke

➤ The hazy air around the IBM/Chipcom smart wiring hub alliance cleared a bit last week at Networld '92, as executives from both companies offered a glimpse into their plans. Don Haile, an IBM LAN systems director, said the companies are developing an Asynchronous Transfer Mode (ATM) switching module in a wiring hub that would interface to IBM/Chipcom-developed ATM workstation adapters. The module would also link to other vendors' stand-alone ATM switches for internetworking over wide areas or with other populations of ATM networks in wiring hubs. Meanwhile, Dave Fowler, Chipcom's vice president of marketing, said his firm is equipping its hubs with per-port networking, where each network port is a dedicated network that can bridge to ATM.

Multiple reasons

➤ Dell, meanwhile, acknowledged at Networld that operating system delays have made it impossible for the firm to meet an internal goal of offering multiprocessor servers by the first half of next year. Richard Brown, Dell's manager of advanced systems marketing, said his firm had expected SunSoft to deliver Solaris with multiprocessing support on the Intel architecture by year's end. "That's [since] moved out in time," he said. Microsoft's delay of Windows NT well into next year is also a setback for multiprocessing, he said.

Still hoping for an ACE

➤ The Advanced Computing Environment (ACE) initiative may be many months in the grave, but for Sunnyvale, Calif.-based Mips Technologies, the goal of standardized RISC platforms running Windows NT is still alive and kicking. Within the next several weeks, a multivendor committee that calls itself the Mips ABI Group (for Application Binary Interface) will announce a new set of software specifications. These specs will reportedly allow applications to run on several hardware platforms — without modification — as long as they comply with ACE's RISC standards.

What a difference a year makes! At the Fall '91 Cube and Use Unisys user group conference in Denver, attendees moaned about the Blue Bell, Pa., firm's shaky financial status while Unisys executives were busy dodging slings and arrows. But last week, at their Fall '92 conference in Atlanta, attendees and Unisys executives were practically elated, given the computer firm's return to profitability. This week, Unisys will report its fourth straight profitable quarter, according to Reto Braun, the company's president and chief operating officer. To celebrate the good news, Braun donned an Atlanta Braves T-shirt and cap and joined Cube and Use attendees in a round of the "Tomahawk chop," a ritual performed by Atlanta's baseball fans. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*

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